ENGINEERING NEWS-RECORD

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A McGRAW-HILL PUBLICATION

E B POWER GS
UNIVERSITY MICROFILMS IN
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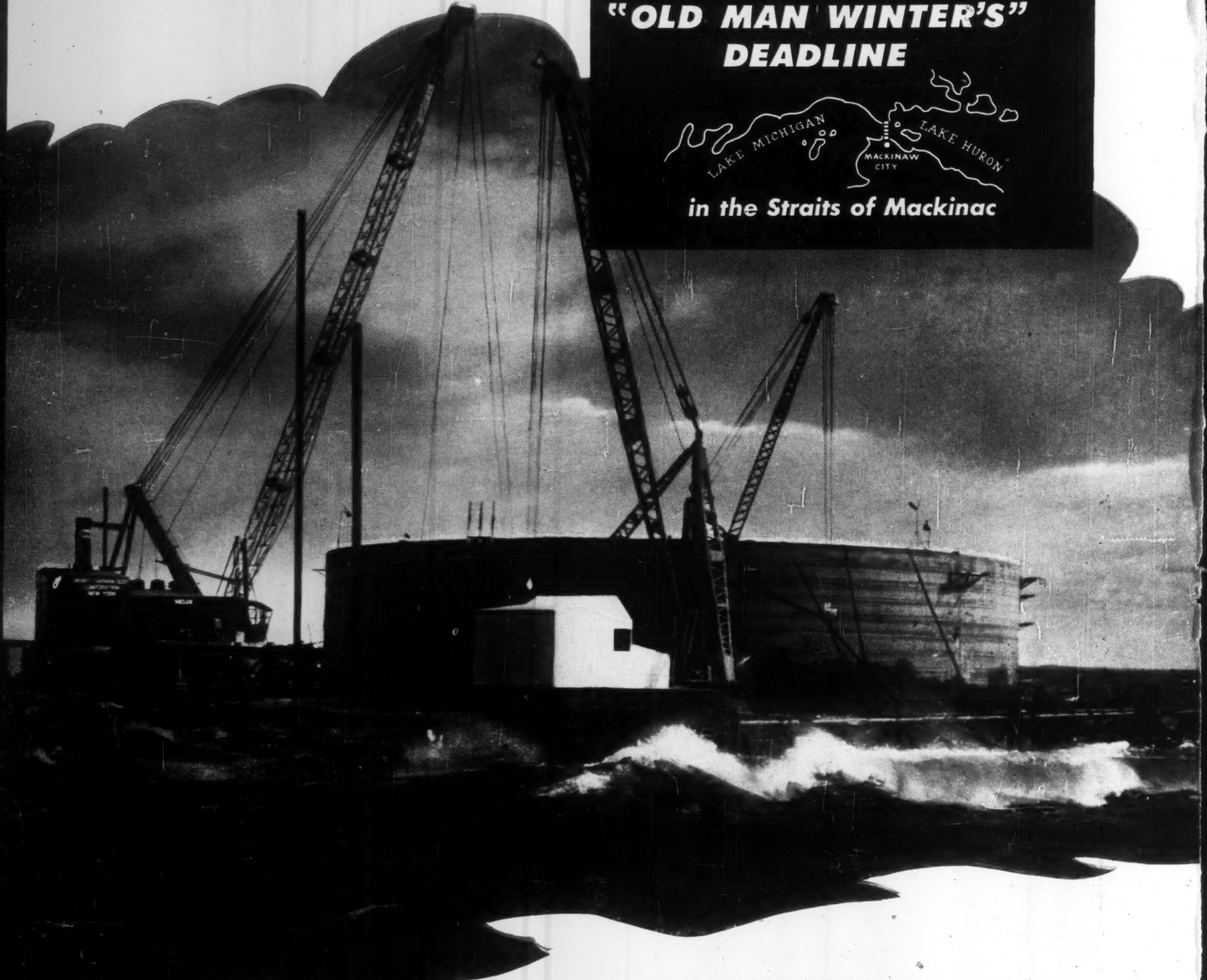
ANN ARBOR MICH

FIGHTING "OLD MAN WINTER'S" DEADLINE



in the Straits of Mackinac

"Old Man Winter's" icy breath set the deadline for the CB&I erection crew that assembled fabricated steel sections for piers 19 and 20 of the $80-million Mackinac Straits bridge in northern Michigan. If the work had not been completed before ice started to form in the Straits serious damage could have been done to the caissons.

Work on the two caissons, subcontracted from Merrit-Chapman & Scott Corporation, was finished several weeks ahead of the deadline. Such are the facilities of Chicago Bridge & Iron Company. From engineering, fabricating and erecting welded storage tanks and other steel plate work to a race with "Old Man Winter", we have complete equipment, experience and knowledge to do the job . . . *right!*

Write our nearest office for further information.

CB&I

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
Los Angeles • New York • Philadelphia • Pittsburgh • Salt Lake City
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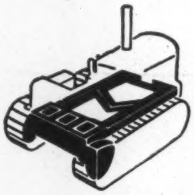
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

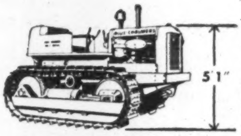
Why the HD-5 gives you EXTRA DOZE-ABILITY

Here are reasons why more and more builders are choosing the popular Allis-Chalmers HD-5 Tractor for all kinds of dozing jobs—from land clearing to landscaping.



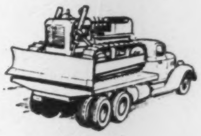
Built with Dozing in Mind The HD-5 is the only crawler in its weight and power class that is *new* in design and built with dozing in mind. The engine is not used as a structural member. Instead, weight and working stresses are carried by a full-length, all-steel welded main frame. This type of frame allows closer mounting of the blade, reduces front-end overhang for better balance, permits more direct down pressure on the blade, eliminates bulky track-straddling frame that often clogs up. The HD-5 is built to stand the gaff in clearing land, building streets — any heavy dozing.

Works Anywhere, Any Time Crawler design features large idler and sprockets, puts more track on the ground for better traction in soft, mucky ground — as in digging drainage ditches or filling in low, swampy areas. Plenty of weight, with low center of gravity, also helps assure good traction for all dozing.

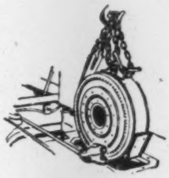


Compact for Tight Places Only 5 ft, 1 in. high and less than 13 ft long, including blade, the HD-5 packs a lot of dozing punch (50 belt hp) in small space—works easily between houses, around poles and trees, any narrow quarters. Double reduction final drive allows ample 11¼-in. ground clearance.

Smooth Hydraulic Blade Control makes it easy for the operator to work all day without undue tiring effort, permits the accuracy needed for finish grade, working close to manholes, other objects. Full vision, simplified shifting, convenient controls, easy steering — all help the operator get the most work done with the least effort.



Quickly Hauled Job-to-Job by truck or small trailer, the HD-5 might be backfilling trenches on one job and a short time later be at another location several miles away excavating or cutting drainage ditches.



Maximum Work Time, Minimum Down Time Unit construction allows removal of major assemblies such as engine, clutch, transmission, steering clutches or final drive without disturbing adjacent assemblies, for big saving in down time — accessibility saves time for inspection, adjustment and servicing — exclusive 1,000-hour lubrication interval for truck wheels, idlers and support rollers cuts greasing time.

Write for literature giving more information — or let your Allis-Chalmers dealer show you how the HD-5B does outstanding work on all types of dozing. He will be glad to demonstrate right on your own job.

50 belt hp, 11,250 lb (bare tractor)

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Verantius' Pons Ferreus
A SUSPENSION BRIDGE DESIGN
early seventeenth century

Engineering problems have been growing more and more complex in the past 300 years, and with them has grown the need for greater drafting precision. Since 1662, when the first Staedtler pencils were produced in Nurnberg, Germany, Staedtler has made constant improvements in pencil design and manufacture. Today, the Mars-Lumograph is America's finest imported drawing pencil; in the clutch pencil field the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.

The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisper, cleaner prints. Perfectly graded in 19 degrees; EXEXB to 9H. $1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. $1.50 each—less in quantity.

1904 Mars-Lumograph Imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbed for firm clutch grip and each has a removable cap which prevents sliding from holder. Available in 18 degrees; EXB to 9H. $1.20 per dozen—less in quantity.

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Robert F. Boger
Publisher

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an EXTRA MARGIN of Strength

BUCYRUS
ERIE
150-B

without Excess Weight

The unique two-section boom used on Bucyrus-Erie $4\frac{1}{2}$- to 8-cu. yd. Ward Leonard electric shovels solves one of the problems of front-end construction on heavy-duty excavators in a sound, practical way. It provides the strength needed to withstand the shock loads of digging, yet is remarkably light in weight to help keep swing inertia low.

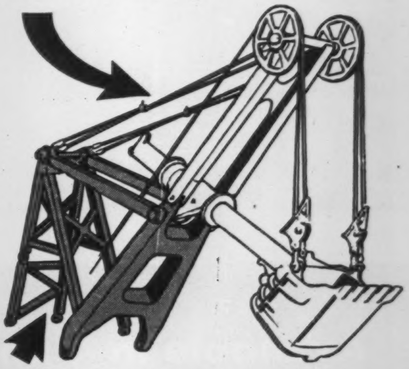
The two-section boom is only one example of *that extra margin* built into Bucyrus-Erie heavy-duty excavators—an extra margin in design *that pays off in extra loads and more output*. There's much more to the story—the tubular dipper handle, the independent rope crowd, the twin dual hoist ropes, the deck location of crowd machinery, the improved dipper design. Write for complete information on the model of your choice—the 4½-yd. 110-B, the 6-yd. 150-B, and the 8-yd. 190-B.

15L54

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

Upper boom section, bridge-strand connected to the A-frame, is relatively lighter in construction, because it has to carry only the loads resulting from the pull of the hoist ropes and from the acceleration and deceleration of the swing.



Sturdy lower section, securely attached to the A-frame by pin-connected struts to form an integral part of the machine, has ample strength to take the stresses and shock loads of the digging cycle. Widespread boom feet provide a brace effect to take swing loads . . . no cable suspension or sway braces are required.

This progress photo shows a portion of the 38-acre assembly plant. The completed structure will also include administrative offices, employees' facilities, a garage, and plant services. General contractor for the project was Fred J. Brotherton, Inc., of Hackensack, N. J.

Giant Ford Plant Erected in 78 Days

Here's one of the speediest jobs of steel erection you're likely to hear about. It's Ford Motor Company's tremendous new plant at Mahwah, N.J., biggest of all the Ford assembly plants.

Starting on February 11, 1954, Bethlehem crews began setting steel for the simple column-and-truss frame as it arrived by rail from the fabricating works in Pottstown, Pa. Close on the heels of the erection gangs came the bolting crews. Working far faster than would be possible with rivets, they set nearly 250,000 bolts, including about 150,000 high-strength bolts. Thanks to speedy bolting, and to a carefully planned and executed job schedule, the 9,600-ton steel framework was completely raised by May 19, completely bolted by May 28—just 78 working days after the job began!

An interesting sidelight is the fact that, at about the same time that Bethlehem Steel Company was working on the Mahwah plant, erection crews of Bethlehem Pacific were constructing another large Ford assembly plant at Milpitas, Calif., near San Francisco. The use of high-strength bolts enabled the crews to erect the 7,650-ton steel skeleton at the rate of two acres a week.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

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First in the field!

New Gardner-Denver 4½″ Wagon Drill

new

4½″ hammer diameter for heavy-duty rock work.

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drilling capacity for handling larger rock bits.

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drilling power for deep hole drilling.

The new WRM123 heavy-duty Wagon Drill combines the new 4½″ Drill, Ring Seal Shank, Sectional Drill Rods, and hydraulic power lifts for positioning the mast. Handles 10- to 12-foot steel changes. Write for additional specifications on Model WRM123.

The new
Gardner-Denver
WRM123
4½″ Wagon Drill

SINCE 1859

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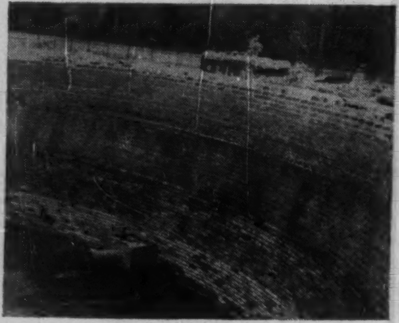

CEMENT GUN COMPANY SOLVES
TWO RESERVOIR PROBLEMS WITH "GUNITE"

Photo at left shows crumbling condition of an 80′ circular brick reservoir in a western Pennsylvania town. It was one of two such reservoirs owned by the municipality, the other being 50′ in diameter. Both leaked badly and were too small to provide desired storage. Photo at right shows how the Cement Gun Company crew solved both problems by coating sides with "GUNITE" and extending the walls 6′ in height with prestressed "GUNITE." Leakage, of course, was eliminated and the capacity of both reservoirs was increased more than 50%. This is just one of many examples of how the Cement Gun Company has been able to rebuild and reconstruct water storage structures to better-than-new condition and, at the same time, provide needed additional capacity.

For illustrations of other "GUNITE" jobs, ask on your letterhead for free copy of Bulletin A 3000 today.

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"GUNITE" CONTRACTORS
GENERAL OFFICES – ALLENTOWN, PA., U. S. A.

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READER COMMENT

P.S. on Buffalo Concrete

SIR: The December 2nd issue of ENR, p. 25, contained a misquote that should be corrected.

This article had to do with a low-rent housing project in Buffalo. Six eight-story buildings and several two story buildings are involved. The concrete in the foundations is not up to specification requirements. The general contract for about $3,500,000 is held by John A. Johnson & Sons, Inc., of Brooklyn. These preamble facts were stated correctly.

As construction engineer for the Buffalo Municipal Housing Authority, for whom this project is being built, I was quoted by you as stating that the concrete was losing strength with age instead of gaining. I made no such statement since there are, as yet, insufficient facts to support a conclusion that the concrete, as poured, is either gaining or losing strength.

ROBERT H. TIFFT
Construction Engineer
Buffalo Municipal Housing Authority
Buffalo 2, N. Y.

[EDITOR'S NOTE—The article pointed out that cores taken 40 days after cylinders were tested showed lower strengths than the cylinders. Obviously, the loss of strength could have resulted from something done to the concrete mix immediately after the cylinders were taken, causing an abrupt loss, or could have been brought about by factors causing a gradual decrease in strength. As Mr. Tifft notes, facts available at present are insufficient to indicate which is the case.]

No Estimate

SIR: Your item in the Dec. 2 issue (p. 28) concerning the Baton Rouge tunnel states that "the Mobile-firm reportedly thinks the work can be done for around $10 million."

Palmer and Baker, Inc., has made no estimates of any kind whatsoever on this project and would not do so until all field and design work was completed.

WAYNE F. PALMER
President
Palmer and Baker, Inc.

Air Baggage Still a Problem

SIR: I want to congratulate you on preparing a very excellent article on airport terminal buildings, which gives a

(*Continued on page 12*)

THE *MEANS* TO AN *END*

V-LOK
STEEL FRAMING

AHEAD OF SCHEDULE

INTERLOCKING STRUCTURAL MEMBERS SPEED ERECTION

V-LOK is an ENGINEER'S ANSWER to many structural design problems — like the average school job for example where the frame is up and roofed in — ready for crafts to move in — in about three days. V-LOK fits smoothly into dimension, load and span requirements whether you have a school, supermarket, warehouse, factory or commercial structure of any kind.

For the bid that wins and an all-time record for your General Contractor — V-LOK is your practical answer.

50,000 sq. ft. erected and one-third under roof.

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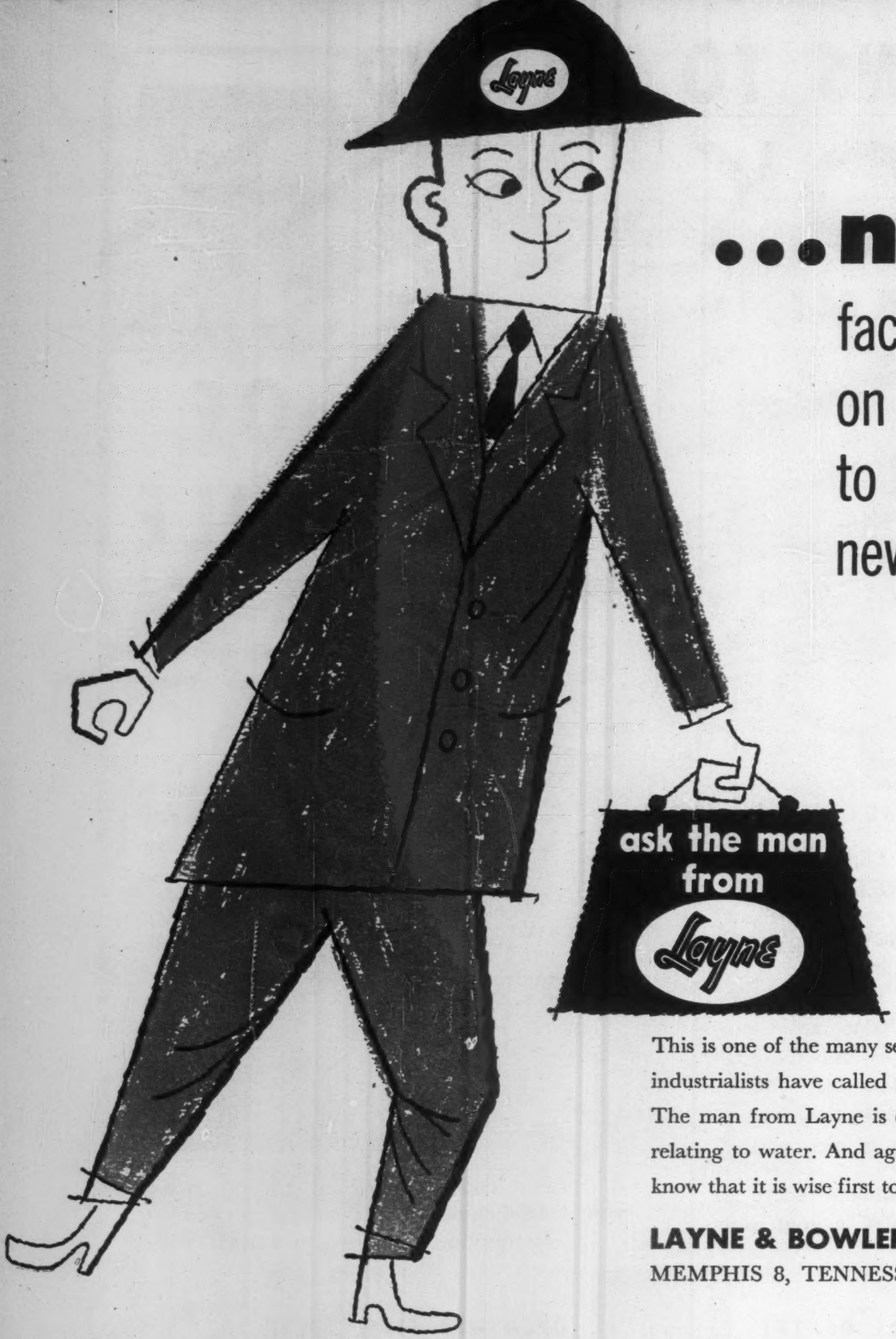
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ask the man from Layne

. . . needed:

factual information
on water potential
to locate
new factory site!

—Many facts must be gathered, screened and verified before a decision that may involve millions of dollars in capital expense is made. And not the least important is the water potential.

This is one of the many services that leading industrialists have called upon Layne to perform. The man from Layne is eager to answer any questions relating to water. And agriculture, industry and municipality know that it is wise first to "ask the man from Layne."

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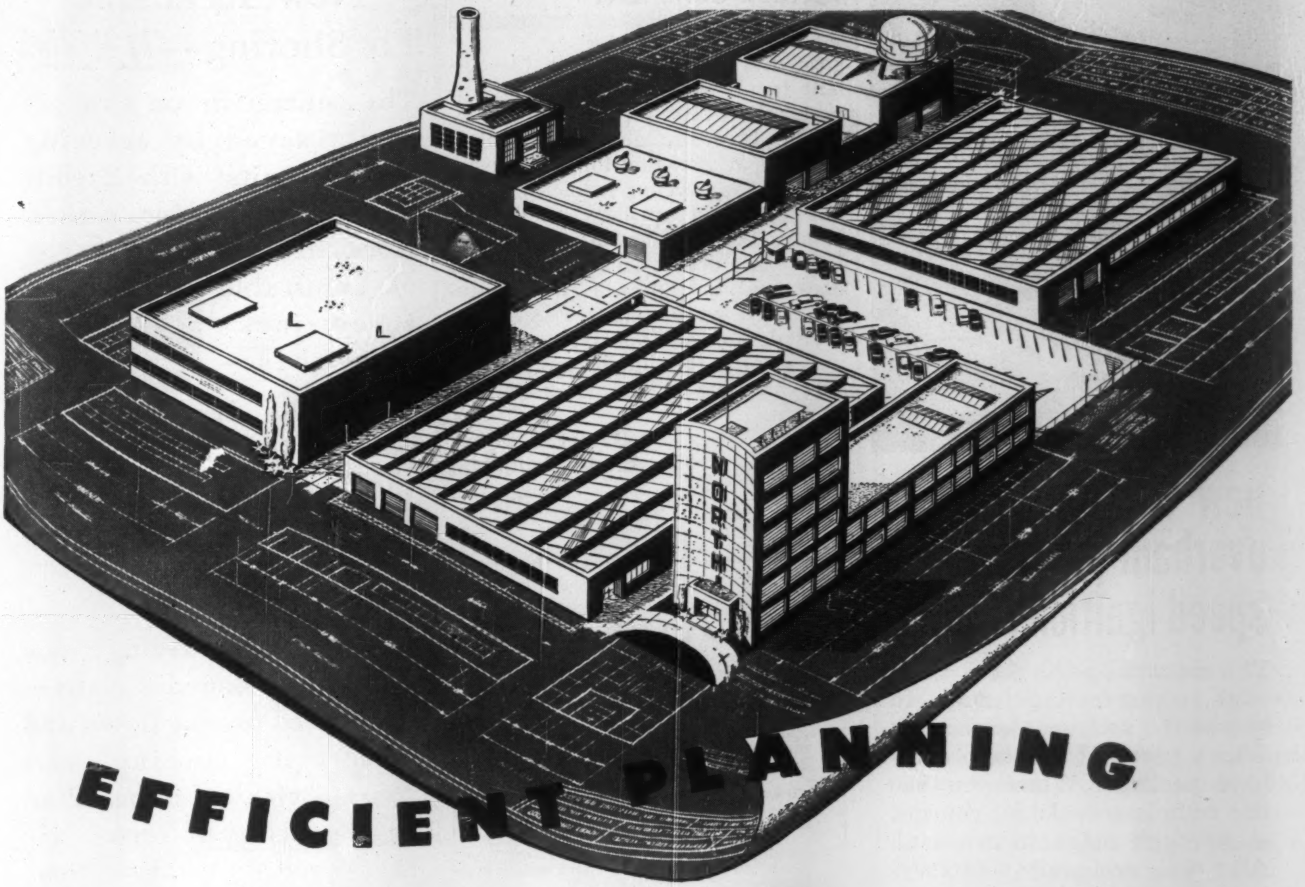

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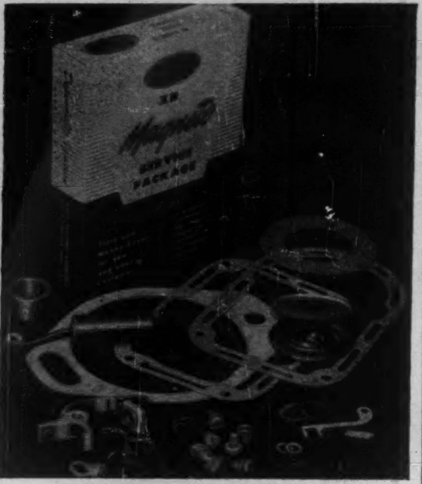

new WICO magneto overhaul packages speed ignition repairs

The essential parts for a thorough, long-lasting magneto overhaul are contained in Wico's new XH magneto overhaul package. When you use the complete package, you get a thorough magneto overhaul. All the necessary, factory-made parts for each repair are right at hand—in one package, under one number, at one price. Besides insuring better repairs, the package saves time spent looking for parts, looking up part numbers, figuring out prices. Time saved this way means your engine is back on the job fast, repair costs are lower, profits are up.

CONSTRUCTION EQUIPMENT ignition repairs last longer when a Wico XH magneto overhaul package is used. Package contains all necessary XH magneto parts for thorough, long-lasting repairs: condenser and contact set, gaskets, screws, breaker arm lock, oil seal, slinger, bushing.
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I can use XH Magneto Overhaul Package No. K9358. Rush me name of distributor nearest me.
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ADDRESS ....
....

READER COMMENT

great deal of information on the current trend, particularly on major airports (ENR Nov. 18, p. 34).

The larger-size airports present a problem in arranging for the convenience of the traveling public that does not occur in smaller installations. Hence, the large airports have gone largely to a double-deck design, which does tend to eliminate walking distances. At the same time, I feel that a great deal of additional time can be well spent in the simplification of baggage handling to make it more convenient.

Ralph H. Burke
Airport Consultant
Chicago, Ill.

CALENDAR

American Road Builders' Association, convention, Roosevelt Hotel, New Orleans, Jan. 10-13.

National Constructors Association, annual meeting, Hotel Plaza, New York City, Jan. 11-13.

Highway Research Board, National Research Council Building, Washington, D. C., Jan. 11-14.

Canadian Construction Association, annual meeting, Chateau Frontenac, Quebec City, Jan. 16-19.

National Association of Home Builders, convention, Conrad Hilton Hotel, Chicago, Jan. 16-20.

The American Institute of Consulting Engineers, annual meeting, Engineers Club, New York City, Jan. 17.

Annual Concrete Conference, Oklahoma A&M College, Jan. 19-21.

Engineers Joint Council, general assembly, Hotel Statler, New York City, Jan. 21.

Associated Equipment Distributors, annual meeting, Conrad Hilton Hotel, Chicago, Jan. 23-27.

Mason Contractors Association of America, annual convention, Jefferson Hotel, St. Louis, Jan. 30-Feb. 2.

Seventh California Street & Highway Conference, Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif., Feb. 2-4.

American Society of Civil Engineers, convention, U. S. Grant Hotel, San Diego, Calif., Feb. 8-11.

National Society of Professional Engineers, spring meeting, Hotel Charlotte, Charlotte, N. C., Feb. 18-19.

American Concrete Institute, annual convention, Hotel Schroeder, Mil., Feb. 21-24.

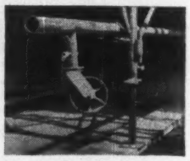
Annual Highway Engineering Conference of the University of Colorado, Boulder, Feb. 24-25.

Concrete Contractor's Association of Greater Chicago, Mid-West Concrete Exposition, Navy Pier, Chicago, Feb. 24-26.

National Association of Corrosion Engineers, annual conference, Palmer House, Chicago, March 7-11.

New Technique For Shoring—*It Rolls!*

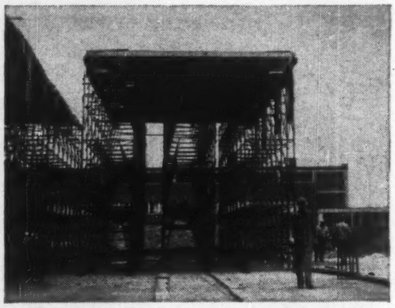
The contractor on this job really saved by erecting shoring units with Ezebilt Scaffold-for-Shoring panels, mounted them on adjustable screw-jacks like this—



After the first slab was poured, (at 21 ft. height) the entire shore-unit was lowered on the casters, and rolled on to the next bay—with the forms intact.

Here were his savings: one rolling rig shored 4 slabs—eliminated tearing-down and re-erecting shoring *three times*—with no re-handling or re-setting of forms. He also saved on erection time, his scaffold-shoring went *'Up Faster'* with Ezebilt's Gravity-Lock mechanism. *You can save on any shoring job* with Universal Scaffold-for-Shoring—then use the same panels for mason work.

Ezebilt SCAFFOLDING



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UNIVERSAL
MANUFACTURING CORP.
ZELIENOPLE 3, PA.

17,435,250 yards

Only 4 Page Automatic Buckets needed to excavate this enormous yardage of slate, blasted rock, and earth overburden. The Peterson Coal Company, Deerfield, Ohio, moved this material since 1942 with a Page Model 618 Walking Dragline and 5 cu. yd. buckets. The two buckets shown in the photo, and one other, are worn beyond economical repair but the Model 618 and the bucket on it are still in good condition.

"That's what we call good service," says Mr. Clyde Peterson, "so when we needed more coal than the 618 could uncover, we bought the Model 721 Page Walker shown in the picture. With a 7 cu. yd. bucket and 125 foot boom it's just what we wanted. Fast, economical, and easy to operate; and the new Page horizontal V-6 Diesel engine has plenty of power for even the heaviest load."

Page Automatic Buckets are noted for their digging ability. Write for bulletin GPB454 for details.

AUTOMATIC DRAGLINE BUCKETS
DIESEL & ELECTRIC WALKING DRAGLINES

Page
ENGINEERING CO.
Clearing P.O. Chicago 38

for lower cost control of moderately **Corrosive** fluids

Fig. 2651-A Gate

JENKINS

NICKEL IRON

Valves with Type 316

STAINLESS STEEL

Trim

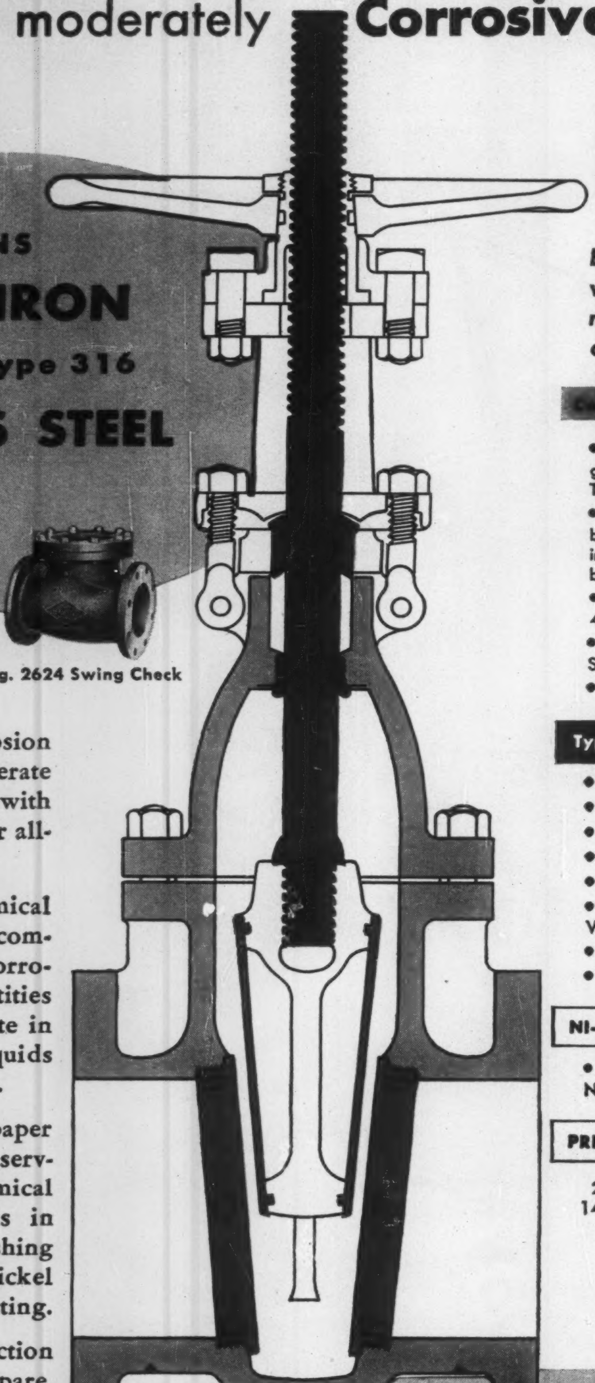

Fig. 2624 Swing Check

Every part in contact with fluid is the right metal to block corrosion and beat wear.

Cast NICKEL IRON

- **BODIES** Heavy duty, dimensioned for greater resistance to wear and abuse. Through port design in Gate Valves.
- **BONNET** Rugged construction, like body. Swing-type gland bolts. Screwed-in back-seating bushing. Deep stuffing box.
- **YOKE** Integral with bonnet in 2" to 4" sizes.
- **WEDGE** In 10" to 24" sizes, with Stainless Steel Wedge Rings.
- **COVER** In Check Valve.

Type 316 STAINLESS STEEL

- SPINDLE
- GLAND
- BONNET BUSHING
- SPINDLE RING
- WEDGE PIN
- WEDGE RINGS Rolled into Nickel Iron Wedge in 10" to 24" sizes.
- SEAT RINGS
- DISC and HANGER in Check Valve

NI-RESIST Type No. 2

- WEDGE of I-beam structure is solid NI-RESIST in 2" to 8" sizes.

PRESSURE RATINGS

2" to 12"—200 lbs. O.W.G.
14" to 24"—150 lbs. O.W.G.

This combination provides corrosion resistance well above the moderate need in many processing services with an investment well below that for all-stainless steel valves.

Designed primarily for the chemical process industries, they are recommended for control of mildly corrosive liquids with minimum quantities of mineral acids, such as creosote in wood treatment, and many liquids carried in petroleum processing.

A major use is in pulp and paper processing, particularly in lines serving the digester, and in the chemical recovery cycle. Service records in lines carrying the valve-punishing "black liquor" give Jenkins Nickel Iron Valves top performance rating.

Jenkins *extra value* construction throughout. Get details — compare. See why they stretch your valve investment dollar — with longer service life, lower maintenance cost.

ALSO RECOMMENDED for fluids used in electroplating, photograph finishing, bleaching, dyeing, and heat treating of metals.

GET COMPLETE SPECIFICATIONS from your Jenkins Valve Distributor, or write: Jenkins Bros., 100 Park Ave., New York 17. Ask for Bulletin 118.

JENKINS

LOOK FOR THE DIAMOND MARK

VALVES

SINCE 1864

TRADE JENKINS MARK

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From Every Standpoint/output · size · efficiency

Chrysler Industrial V-8 Engines are the best power you can install

Chrysler Industrial V-8 Engines are . . . pound for pound . . . the world's most powerful gasoline industrial engines.

To prove that statement—let's look at the facts. In the charts below, we compare Chrysler Ind. 24A V-8 Engine with similarly equipped products of five principal competitors. Information on each competitive engine is based upon factory specifications. Check the Chrysler advantages—each of them is an important factor in the selection of a power plant.

Engine	Horsepower and Piston Displacement	Pounds per Horsepower	Fuel Consumption —pounds per BHP per hour	Horsepower per Cubic Inch Displacement	
Engine A	110 at 2200 RPM 358 cu. in.	(Stripped Engine) 7.38	.54	.307	**CHRYSLER ADVANTAGES OVER ENGINE A** . . . delivers 18 more horsepower . . . weighs 96 pounds less with 24% less weight per horsepower . . . uses 7.5% less fuel at average operating speed . . . delivers 26% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	(Stripped Engine) 5.58	.50	.387	
Engine B	104 at 2400 RPM* 330 cu. in.	(Stripped Engine) 6.92	(Information not available)	.315	**CHRYSLER ADVANTAGES OVER ENGINE B** . . . delivers 34 more horsepower . . . weighs 5 pounds less with 25% less weight per horsepower . . . delivers 32% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	138 at 2400 RPM 331 cu. in.	(Stripped Engine) 5.18	.50	.416	
Engine C	99 at 2200 RPM 320 cu. in.	(Stripped Engine) 7.64	.56	.309	**CHRYSLER ADVANTAGES OVER ENGINE C** . . . delivers 29 more horsepower . . . weighs 60 pounds less with 27% less weight per horsepower . . . uses 10.5% less fuel at average operating speed . . . delivers 25% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	(Stripped Engine) 5.58	.50	.387	
Engine D	117 at 2200 RPM 317 cu. in.	6.5**	.50	.369	**CHRYSLER ADVANTAGES OVER ENGINE D** . . . delivers 11 more horsepower . . . weighs 19 pounds more *but* with 6% less weight per horsepower . . . delivers 5% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	6.1**	.50	.387	
Engine E	97 at 2200 RPM 372 cu. in.	(Complete Engine) 12.85	.58	.260	**CHRYSLER ADVANTAGES OVER ENGINE E** . . . delivers 31 more horsepower . . . weighs 395 pounds less with 48.7% less weight per horsepower . . . uses 14% less fuel at average operating speed . . . delivers 49% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	(Complete Engine) 6.6	.50	.387	

**Information not available at 2200 RPM* ***Complete engine less flywheel housing*

These are not just "paper advantages". They show up on irrigation pumps, in construction and road building equipment, in farm combines, and in many other applications. Thanks to modern engineering, hemispherical-design combustion chamber, short-stroke, low-friction construction, Chrysler offers durability and output in amazingly small, lightweight power packages.

And remember Chrysler Industrial Engines can be factory equipped for operation with gasoline, natural or L-P gas.

See a dealer or write: Dept. 91, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.

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INDUSTRIAL
ENGINES
Horsepower With A Pedigree
INDUSTRIAL ENGINE DIVISION
CHRYSLER CORPORATION

BETTER THAN THE BEST BUT PRICED WITH THE LOWEST

580 times more water than flows over Niagara Falls!

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1955
FIFTY YEARS OF EXPERIENCE
REINFORCED CONCRETE PIPE
WATER
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SEWER
SUBAQUEOUS

IN 50 YEARS Lock Joint Pipe Company has developed and produced concrete pressure pipe for countless water works installations throughout the world. Today, at any given second of the day or night, these pipes are transporting better than 1,000,000,000 gallons of water — or more than 580 times as much water as is flowing over Niagara Falls.

This is the measure of the tremendous contribution Lock Joint Pipe has made, over the past half century, toward meeting one of civilization's most serious problems — water supply.

You may be sure that every resource of skill, experience and research at our command is at this very moment working on the answers to the even greater problems we must meet in the *next* 50 years!

LOCK JOINT PIPE COMPANY

Established 1905

P. O. Box 269, East Orange, N. J.

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo.

ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

PAY UP!—Government work or not, if you're a contractor and buy materials for use in North Dakota, you pay state sales and use taxes.

So said Chief Justice James Morris of the North Dakota State Supreme Court, in an opinion that affirmed the state's right to keep $141,900 paid under protest by contractors. The builders contended that the materials they bought were to be incorporated in buildings for public agencies—and these owners, if anybody, should thus pay the taxes.

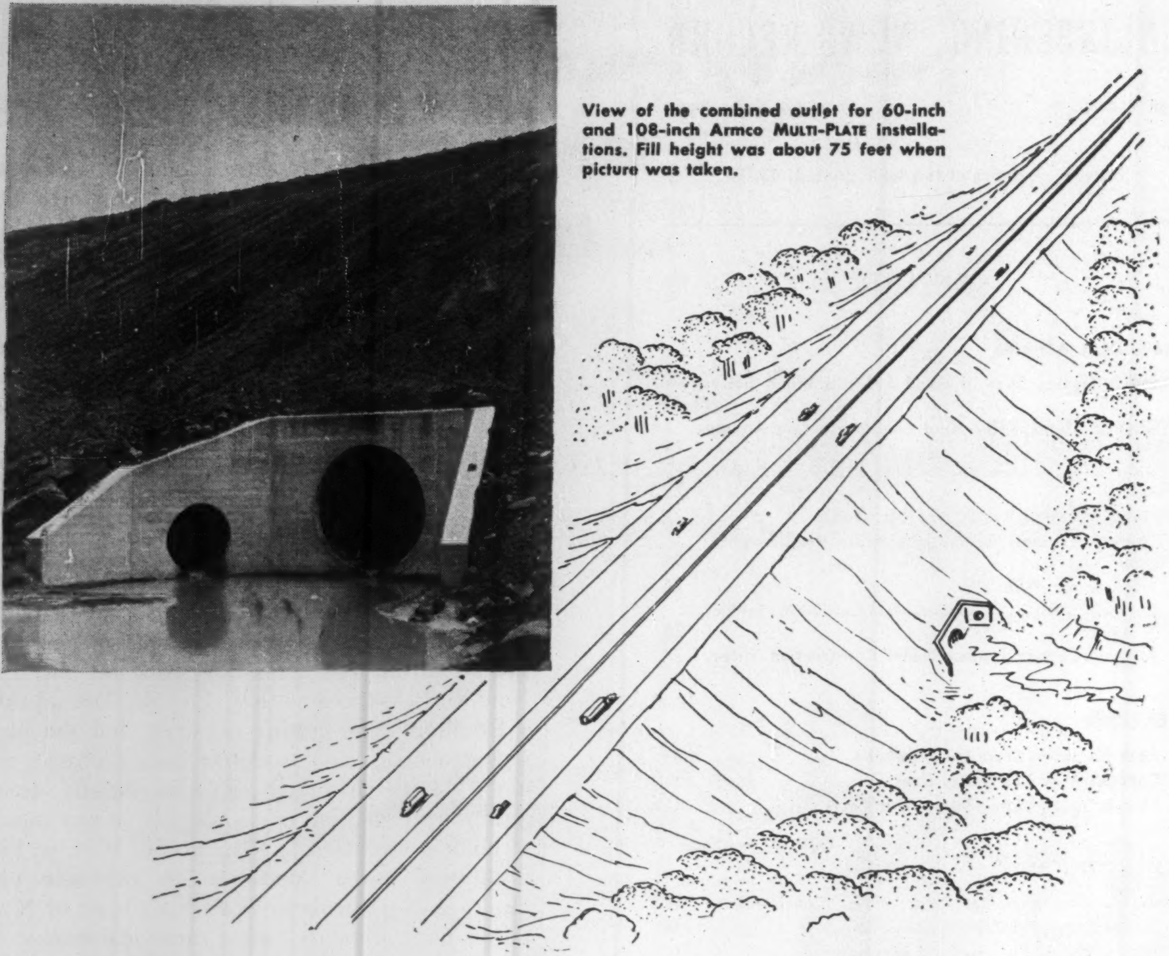
Not so, said the high court, in affirming a lower court decision: The contractor is the ultimate consumer.

NO PREVENTION—The cause of construction safety got nowhere at all—at least in so far as sandhogs and X-rays are concerned—when pre-employment exams started last week for work on the Port of New York Authority's third Lincoln Tunnel tube.

Sandhogs were getting physicals, but the physicals included no X-rays (to detect bone-necrosis), and no blood tests. Although PNYA officially denied it (and so did sandhog union officials) it was more than a rumor a week ago (ENR Dec 30, 1954, p. 15) that traditional union opposition to extensive physical exams—and particularly to PNYA's hope of X-rays to detect bone ailments—might cause real trouble on the job, when work under air begins this month. Unions figure this kind of physical exam upsets seniority systems; gives employers an added weapon in dealing with the men.

READY—Wasting no time, Arkansas' Highway Commission has authorized employment of outside engineers "to assure immediate use of any additional money that might become available as a result of proposed federal legislation."

ONE TOWER IN '55—The first of five Air Force radar platforms ("Texas Towers," ENR Nov. 25, 1954, p. 27) will rise 100 mi off the New England coast next summer, now that the Navy has engaged a three-firm joint venture to do the job. Bethlehem Steel Co. will build the platform at its Quincy, Mass., shipyard, then Raymond Concrete Pile Co. and Delong Engineering Co. will install it on the continental shelf, out at sea. Award came as a pleasant surprise to observers who feared preliminaries had taken too long to permit any installation in 1955. (Summer "safe time" for at-site work ends Aug. 10.) Contract amount, not yet nailed down by the parties, is somewhere between $5 million and $10 million. Experience gained on this pioneer effort will permit competitive bidding for the four remaining platforms, to be built in 1956.



View of the combined outlet for 60-inch and 108-inch Armco MULTI-PLATE installations. Fill height was about 75 feet when picture was taken.

FLEXIBLE ARMCO PIPE HANDLES OHIO TURNPIKE'S HIGHEST FILL

The highest fill on the Ohio Turnpike—110 feet—is located just east of the Turnpike's highest bridge, crossing the Cuyahoga River. More than a quarter of a mile of Armco Corrugated Metal Structures carry drainage through this fill.

One line of 108-inch diameter Armco MULTI-PLATE Pipe runs 516 feet, directly under the Turnpike. A smaller pipe, 980 feet long, drains another area further east. This line runs diagonally through the fill to the same outlet.

Even under the tremendous earth load of high fills like this, Armco Corrugated Metal Pipe remains structurally sound. There is no danger of cracking or breaking. Thanks to flexible, corrugated metal design, loads are distributed around the entire periphery of the pipe instead of being concentrated top and bottom as with rigid pipe. Long service life is assured.

Armco Drainage Structures are available in a wide range of sizes, gages and shapes. It is easy to get the right structure to meet your specific needs. Write us for data. Armco Drainage & Metal Products, Inc., 3715 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES ARMCO®

WASHINGTON OBSERVER

Engineers and construction have a lot at stake in this year's politics—You can already come up with an idea on how most issues of interest to them are likely to fare. There's going to be something for everybody: legislation proposed on wages, labor law, highways, taxes, pay for federal employees and the military, foreign trade, aid to Asia, railroads and truckers, health insurance, and more.

•

This week's State of the Union Message lists the key items—But on many of these you will be reading special and detailed messages wrapping up the specifics of what Eisenhower wants Congress to pass.

The President's budget will have the word for construction spending—how much the Administration would like to spend for what projects and programs for the year beginning next July 1. This includes such programs as Rivers and Harbors, Flood Control, Reclamation, Public Housing, Military Public Works, government building under lease-purchase, and the like. That message is due on Jan. 17. Despite the fact that fiscal 1956 will be another deficit year, the Administration isn't going to be making new cuts on public works to try to make spending match income for the year. The economic report due Jan. 20 will bolster the Administration's line on the business outlook—and show how it figures construction fits into the picture.

•

Eisenhower's message proposing the new highway program is scheduled for Jan. 27. This is the biggest single construction package any President has proposed in recent years. In its impact on this area of construction, it's comparable to the boost given homebuilding by the federal aids to that industry.

As things stand now, the final version of the highway proposal will be taken up next week by the Clay committee. But barring any last-minute hitch, it will be pretty much as generally reported: Federal government to take over financing of the interstate system, and finance its share of the added cost by creating a new highway construction agency to float bonds.

Democrats will criticize but not oppose the program—and much of what Eisenhower asks for is rated as sure of passage.

•

Other items of importance to engineers and building firms are on the agenda.

Reduction of corporate income tax rate from present 52% to 47% is called for in the present law. But Eisenhower will ask continuation of the present rate, and Congress will vote this for another year.

Changes in Taft-Hartley aren't likely, but minimum wage will rise, perhaps to 85 or 90 cents. Many industries now exempt may be brought under the law. It'll have the effect of upgrading the lowest wage rates in all industry.

Chances are good for boost for imports since Democrats are generally heavily in favor of aids to foreign trade.

Chances are good for pay boosts for engineers working for either civilian agencies or Army Engineers, with Eisenhower backing in special messages.

•

Three exporters of construction machinery got lines of credit this week from the Export-Import Bank. This makes five companies that have gotten aid from the agency in advance of specific sales in order to help them compete with foreign makers in so-called third markets. Latest beneficiaries: Athey Products Corp., $225,000; Jaeger Machine Co., $575,000; and Thew Shovel Co., $700,000. Earlier, LeTourneau-Westinghouse and Barber Greene Co. got similar lines of credit.

Greatest speed, power and work range of any full 1-yd rig!

LS-98
LINK-BELT SPEEDER

It's the LS-98 . . . another NEW Link-Belt Speeder

IN the full 1-yard class—they don't come any faster or more powerful than the new LS-98 Link-Belt Speeder! Since first introduced in May, coast-to-coast records prove *you get more productive capacity, no matter what the job!*

Speed-o-Matic power hydraulic controls make machine movements instantaneous, smooth, precise. Effortless operation helps increase output 25% and more.

You get more cycles too, because LS-98 has more "live" weight and structural strength to utilize extra useable hp. Combine this with exceptional maneuverability *plus* practical transportability—no wonder LS-98 is acclaimed today's greatest full 1-yard shovel-crane investment!

ATTENTION ALL SHOVEL-CRANE BUYERS:
Your Link-Belt Speeder Distributor is currently introducing a great deal of new equipment to help you make more money. So, before you buy a shovel-crane of *any* capacity for *any* application—be sure you check with him. You'll be glad you did.

LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa

A few of the many LS-98 features

★ **Speed-o-Matic controls** put LS-98's extra hp at operator's fingertips. Smooth dig-swing-dump action means more cycles per day.

★ **Foolproof power steering.** Every travel and operating action is controlled from operator's position, even setting the digging brakes.

★ **Power load lowering clutches.** Available for either or both main drums. An exclusive feature.

★ **Interchangeable, shoe-type clutches** are self-adjusting, internal expanding. Shells are high-friction alloy cast iron. All clutches interchangeable.

★ **Massive, dual, conical hook rollers,** riding on roller bearings in machined roller path, eliminate center pin pull and increase roller path life.

★ **Gears enclosed, running in oil.** All horizontal deck gears and swing-travel bevel gears enclosed and run in oil.

13,687

LINK-BELT SPEEDER

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

ENR's Figures Show:

1954 Was a Good Year; 1955 Will Be Better

The ENR forecast last February that heavy construction contracts would amount to $14.4 billion in 1954 was almost a bullseye. The actual total was less than 1% higher at $14.5 billion.

For 1955, the ENR forecast predicts an 8% rise in heavy construction contracts to a total of more than $15.6 billion. That would make 1955 the second highest year on record, only slightly lower than 1952's $15.7 billion when atomic energy construction accounted for $2.3 billion of this total.

ENR's preliminary forecast for 1955 was $15.2 billion (ENR Sept. 30, 1954, p. 21). But a marked increase in the rate of proposed work during the last quarter and the continuing boom in housing construction demanded an upward revision of this figure.

Total private construction is expected to rise 5% to a new all-time high of $8.7 billion. State and local construction should reach a record total of $5.6 billion, 12% above the 1954 high. Federal contracts may hit $1.4 billion, 9% higher than in 1954 but far below 1952's record $4.5 billion. (For details see table on page 23.)

A particularly good year is forecast for highway construction, which is expected to go up 23% to nearly $2.4 billion. Waterworks is due to reach a record $250 million; and private mass housing a new high of $4.4 billion.

Heavy construction got off to a slow start in 1954. At the end of the first quarter, contract awards were 34% behind 1953 volume. In the second quarter, business began to boom. Sparked by highways, housing, commercial building and a short-lived spurt in industrial construction, contract volume hit an all-time high for the second quarter.

At the end of the first six months, volume was only 14% behind 1953. By the end of the year, the 34% first quarter gap had been reduced in the 12-month total to only 2% under 1953.

Records were established in 1954 by commercial building, which skyrocketed 37% over 1953; by mass private housing, which was up 25% and by highways, up 9%.

New England

The moderate recovery that already has started in this area should continue during the first half of 1955. Homebuilders are confident the housing boom will keep going. Some of them are planning bigger programs. One interesting point noted by local bankers is that many current applicants for home loans are tenants in public housing projects who find themselves able to meet carrying charges under the liberalized 1954 Housing Act.

Industrial and commercial construction should hold up, especially in the area around Route 128, the new express highway circling Boston. Early in the year, American Mutual Liability Insurance Co. is expected to ask for bids on its new $2-million office building in Wakefield. Allied Container Corp. has just bought 27 acres in Dedham near the highway and plans $2 million of construction there.

Prudential Insurace Co. has announced that it's going to build a regional office building in southern New England as part of its long-range program of setting up regional home offices (ENR Dec. 16, 1954, p. 35).

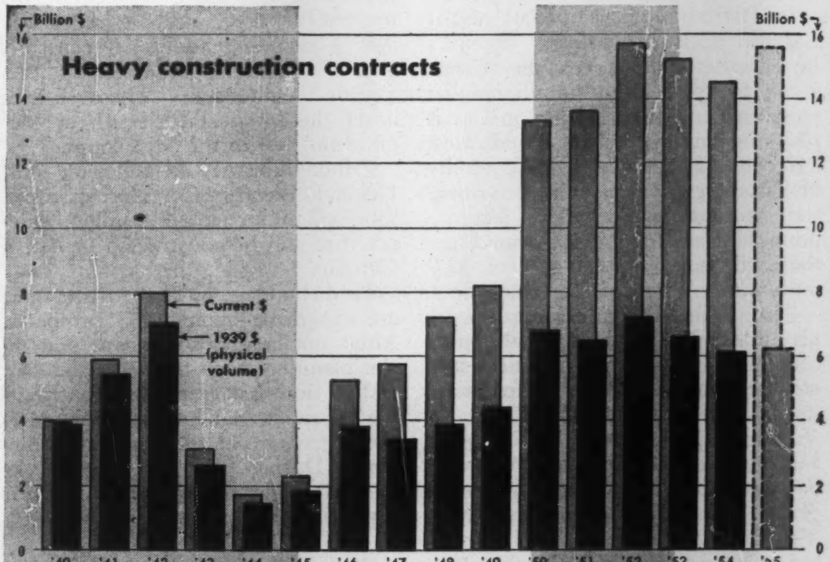
New England's biggest commercial project, the $80-million Back Bay Business center in Boston, is stymied for the moment. Its backers believe that it is not financially feasible unless property tax concessions are granted. Naturally, this arouses fierce opposition from downtown taxpayers.

The Corps of Engineers says it expects to place about $88 million in new contracts before March 1, most of them for airport work. The New England Telephone & Telegraph Co. has an $84-million capital budget for 1955, slightly above last year. And six states now are engaged in spendnig about $1 billion on new or improved roads. About $550 million of this is in the Massachusetts program, which includes completion of the Boston Central Artery and initial construction on the East-West toll road.

Middle Atlantic

The first half of 1955 promises to bring plenty of new construction business, particularly in the fast-growing Delaware Valley. Much industrial and commercial construction however, depends on the proposed deepening of the Delaware River ship channel between Philadelphia and Trenton. It's estimated that over $300 million of construction work is now in varying stages of planning, waiting for this project.

Heavy construction volume in New York State is expected to move higher



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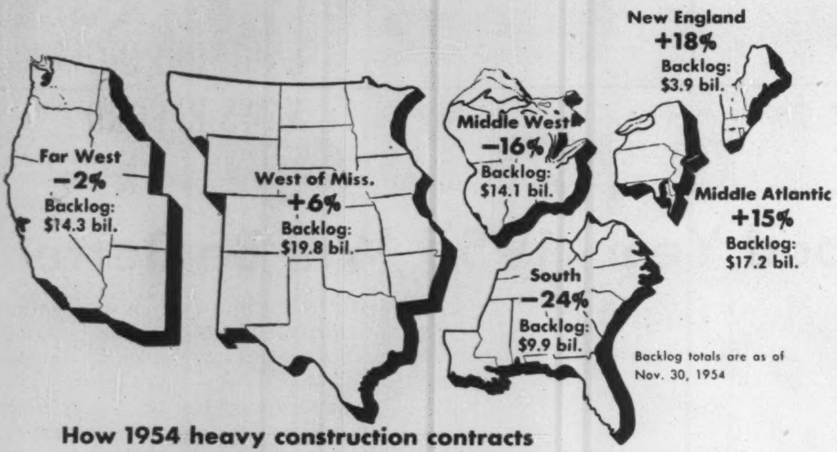


Backlog totals are as of Nov. 30, 1954

How 1954 heavy construction contracts compare with 1953 volume—by region

this year as contract letting on the $1-billion St. Lawrence Power and Seaway projects picks up speed. In addition, a substantial number of major office and apartment buildings are being planned for New York City and the metropolitan area.

Statisticians of the Pennsylvinia Department of Commerce estimate that, based on building permits issued, general building activity in the state during the first half should total $350 million, which would be about 10% more than the figure reached during the same 1954 period.

Homebuilders in the Greater Philadelphia area, including southern New Jersey, have big plans. The number of homes built in this area during 1955 could well outdistance 1954, if materials and labor are available.

Many millions will be spent on highway construction. For instance, the Pennsylvania State Highway Department plans to spend about $160 million this year, a good part of it for improvement of secondary and rural roads.

In Pittsburgh, development of the Gateway Center continues. People's First National Bank & Trust Co. is going to erect a multi-million-dollar structure, and Bell Telephone Co. is planning another that would have 240,000 sq ft of space. The University of Pittsburgh is continuing its long-term expansion program; it has announced plans for four new buildings, that will have a total cost of $2.9 million.

The Don Casto organization is planning to build at least five shopping centers in the Pittsburgh area, and other centers also are in the planning stage.

Work will start soon in Pittsburgh and Allegheny County on a $70-million program of sewers and treatment plants. Once this program gets started, it's expected that many smaller communities on the Ohio River will follow suit.

In Maryland, a $35-million contract is expected to be let during the first half of the year on the Baltimore harbor tunnel. And the state government expects to let hospital contracts totaling about $10 million in the first half. Homebuilders expect a good six months. They note an upgrading of demand for homes in the $12,000 to $17,000 class and in the $30,000-$50,000 range.

South

There's a feeling of high optimism among southern business leaders. They're encouraged by signs of an upturn in just about every phase of the region's economy.

The chief reason for the South's growing prosperity is the influx of new industry. That means new families, new payrolls, new demands for housing, for goods and services. Take the chemical industry, for instance. During the year just past, this industry has completed construction of $228 million of new plant and equipment, has another $107 million under way and is planning additional construction of about $84 million in projects already announced. These figures cover the seven states south of Virginia and east of the Mississippi.

Other industries are following suit. General Electric Co., for example, soon will announce a $50-million project that will be constructed in North Carolina.

Homebuilders in the Atlanta area are optimistic about 1955 prospects. More one-family homes are now in the planning stage than was the case at this time last year. Also contributing to residential building volume is the faster pace of apartment construction. During the past few weeks alone, building permits were issued for three large projects valued at $4.5 million.

Throughout the South, a good deal of school construction is expected to get under way in 1955. The Georgia School Building Authority, for instance, will begin an estimated $15 million to $20 million of new construction.

As usual, Florida is one of the brightest spots in the South. The biggest single project here is reconstruction of the Homestead Air Force Base 30 mi south of Miami. The government is spending $50 million there, of which only half has been let so far.

In addition, there is plenty of residential and commercial building going on in the east coast strip from Miami to Palm Beach (ENR Dec. 16, 1954, p. 77). There is also a good deal in Jacksonville and along the lower west coast. One $8-million shopping center project in Dade County (Miami) is just getting under way. And sponsors of a $12-million center in the northern part of the county say they plan to start construction early next year.

In Louisiana, bids will be opened this month for construction of four piers of a new Mississippi River bridge, costing about $12 million. Also bids will be opened this month for a $7-million interchange on the Pontchartrain Expressway.

Around Memphis, Tenn., local observers are predicting more than $100 million of commercial, industrial, and residential construction in 1955. It's estimated that there will be $40 million of shopping centers, $40 million of residential units, and $30 million of industrial and other commercial projects.

In West Virginia, though general conditions are seriously affected by the depression in the coal industry, some industrial building is going on in the Kanawha River Valley (Charleston and environs), and in the Ohio River Valley. For instance, Kaiser Aluminum & Chemical Co. soon will be letting some contracts for its rolling mill near Ravenswood.

Middle West

Studebaker-Packard Corp. continues to modernize the Packard facilities in Detroit and will let contracts totaling over $2 million during the first half of this year. Ford plans an office building in Dearborn, to cost over $2 million. Sometime in the future, it will build a new plant north of Detroit.

In Detroit, Mayor Albert Cobo is moving to get court orders to condemn property for proposed parking areas. This is part of a $15.5-million parking program which might mean some construction business before long.

In the Cleveland area, homebuilders say there are still plenty of prospective buyers around. The City Planning Commission has recommended capital spending of about $70 million this year, of which about $26 million would be for a freeway program. In the Columbus area, in addition to many millions for public works, a $10-million shopping center is planned.

The Illinois State Highway Department has set up a $123-million road and bridge construction budget for 1955 with $27 million of the total allocated to Cook County which surrounds Chicago.

Cook County would like to float a $245-million bond issue this year in order to complete its basic superhighway system within three or four years instead of 12 years as originally planned. The county, however, will require enabling state legislation to do this.

Private construction in the Chicago metropolitan area also is expected to continue high this year. Some of the larger projects announced include: an addition to the Indiana Steel Co. plant at Indiana Harbor; a $5-million shopping center in Gary, Ind.; a deep-water grain terminal in Chicago; and a cement plant near Gary for Universal Atlas Cement Co.

In Indiana, the big news in construction is, of course, the east-west toll road, on which most contracts already have been let or bids received. Another big job coming up: $18 million of work at the old Bunker Hill Naval Station near Peru, to turn it into an Air Force center. Two shopping centers in Indianapolis, each to cost about $4 million, are planned for early construction.

In Milwaukee, work on the first building of a proposed $25-million industrial district has begun. This is the biggest single industrial project ever planned in the state. Construction of a shopping center to cost from $15 million to $18 million also is expected to get under way soon in the Milwaukee area.

West of Mississippi

Around St. Louis, 1955 prospects look as good or better than in the peak year of 1953. By far the biggest project on the boards is the $13.3-million uranium processing plant at Weldon Spring Ordnance Works, about 27 mi northwest of St. Louis. This AEC facility and a $6.5-million enlargement of an existing AEC plant operated by Mallinckrodt Chemical Works in St. Louis are expected to get started early this year.

Brown Shoe Co. is expected to award the contract for a $6-million building soon, and a $10-million office building is being considered for downtown St. Louis—the first major office building project since 1926. Many shopping centers also are slated for construction starts in this area during 1955.

In the Kansas City area, the housing boom is going strong. Within the last few weeks, four major projects totaling almost 2,000 units have been announced. At least five shopping centers, costing a total of about $8 million, are in the works for this year. A major office building, to cost about $8 million, is planned for downtown. And International Business Machines Corp. and the Midwest Research Institute are going to build smaller buildings.

In Omaha, local people estimate that as much as $100 million of industrial, commercial, and public works could get started in the first half of the year. For instance, if the Federal Power Commission OK's Northern Natural Gas Co.'s application to sell additional gas on a firm basis to Allied Chemical & Dye Corp., then Allied is expected to double the investment in its new $27-million plant. Also in the indefinite stage is the $6-million-plus control center for the Strategic Air Command.

In Houston, the homebuilding boom is moving right along. It's estimated that 2,000 new people move into town each month. About half a dozen big tract developments are in the works, some of them are planned with their own shopping centers and golf clubs.

Far West

Around Los Angeles, the feeling is that business is going to improve this year. Los Angeles was not hit as hard by the "readjustment" as some other areas and has recovered quicker. Reasons: the high level of orders of the aircraft industry and development of such growth industries as electronics.

Homebuilding here continues to confound the experts. In spite of the fact that selling is getting tougher and vacancies (particularly in multiple dwellings) are mounting, builders' plans suggest that 1955 starts will equal 1954.

Local observers say commercial building is still in a real boom. Shopping centers, hospitals, and churches have not kept pace with homes, decentralization, and the ever growing population.

Several large office buildings are planned and may be out for bids in the first half.

Among industrial projects that may get under way in the first half of 1955: a $10-million guided missile and nuclear research laboratory for Lockheed, a "multi-million" plant expansion at Northrop Aircraft.

In the San Francisco area, the law of diminishing returns seems to have caught up with shopping centers, according to the Bay Area Council. But most other categories of construction are expected to do better than last year. There's plenty of school, sewerage, and parking work. And several big industrial projects have been announced.

Out in Hawaii, Standard Oil of California says it will build a $30-million to $35-million refinery in the Honolulu area as soon as a suitable site can be found.

How Heavy Construction Shapes Up for 1955

	Actual		Forecast	Percent Change	
Type of work	**1953 (53 wks)**	**1954 (52 wks)**	**1955 (52 wks)**	**53-54 (Based on av wk)**	**54-55**
	Millions of dollars				
Total	**$15,171**	**$14,542**	**$15,640**	**−2**	**+ 8**
Private	**8,665**	**8,255**	**8,660**	**−3**	**+ 5**
Public	**6,506**	**6,287**	**6,980**	**−1.5**	**+11**
State and municipal	5,088	5,001	5,580	+0.2	+12
Federal	1,418	1,286	1,400	−8	+ 9
Public					
Waterworks	247	245	250	+1	+ 2
Sewerage	431	388	410	−8	+ 6
Bridges*	752	510	525	−31	+ 3
Highways	1,792	1,919	2,355	+9	+23
Earthwork, irr.	374	339	475	−8	+40
Building, excl housing	1,736	1,762	1,860	+3	+ 6
Housing	376	255	230	−31	−10
Unclassified	805	880	875	+11	− 1
Private					
Housing	3,464	4,232	4,400	+25	+ 4
Commercial	1,157	1,551	1,520	+37	− 2
Industrial	3,178	1,876	1,990	−40	+ 6
Unclassified	857	585	750	−30	+28

*Includes privately owned bridges: $9 mil. in '53; $11 mil. in '54.

A few years ago, the Army picked an engineer team for a tough and exciting job—

CHIEF of the Military Construction Field Group is Clarence E. Stahl (left) shown here with Col. Herman Orr (center) and Lt. Col. Florence O. Biehn.

Riding Herd on Construction Around the World

A day for Col. Herman Orr began recently when, yawning, he boarded a westbound plane in the pre-dawn darkness of Dhahran in Saudi Arabia. When he bedded down that night in Munich, he would have been hard put to guess whether he might be sleeping in Iceland or Puerto Rico a week later.

But probably he would have been willing to bet that he would not be at home in Omaha, Neb., headquarters of the unusual engineering organization to which he belongs.

The organization is the Military Construction Field Group of the Office of the Chief of Engineers. It is a group of less than a dozen engineer inspectors, working directly under the Chief of Engineers, who roam the world to look over military construction jobs. They submit their reports directly to the chief's office in Washington.

• Its a big job—Col. Orr and his associates probably travel farther—par for the group is a million miles a year—look over more work and swing more weight than any group of similar size anywhere.

They cover the earth from Saudi Arabia to Johnston Island in the far reaches of the Pacific and from the Panama Canal Zone to Point Barrow, Alaska—and occasionally even closer to the North Pole.

Since the office was set up two years ago, they have inspected some $4 billion of construction. Right now, they are working through a list of some 3,000 jobs covering all types of military construction from laundries and barracks to air bases, pipelines and diesel generating plants.

• Every man a specialist—The Field Group was organized by Lt. Gen. Lewis A. Pick, then Chief of Engineers, when a Senate storm blew up over construction of the Moroccan air bases. Gen. Pick chose Clarence E. Stahl, a tough, ham-fisted veteran of Army Engineer service, to head the new organization.

Stahl tackled the assignment with vigor. He ranged the field of reserve officers on active duty to find the special talents he needed. The result is a strictly virtuoso organization with specialists in every phase of military construction.

Lt. Col. Lindsay Applegate, formerly of the Bonneville Power Administration, holds three electrical degrees and is a patent attorney. What's more he holds a number of patents, himself. In radio, he is known for the Applegate Diagram, and his manual on electrical and cathodic protection is an accepted text for Army Engineers.

Col. Charles Hunnell, formerly with the Indiana Highway Department, and Col. Orr, who was with the Alabama Highway Department, are specialists on pavements.

Col. Edwin P. Streck was recalled from contracting work in Kansas City and St. Louis to become the group's specialist on construction management.

Lt. Col. Florence O. Biehn and Col. Frank H. Read, Jr., are structural engineers, and Lt. Col. Alden C. Grant, Maj. Harry R. Stansbury and Lawrence E. Broggini concentrate on mechanical problems. An administrative assistant and two clerks complete the office.

• Their record speaks for itself—In the two years of its existence, this group has totted up a record to be proud of. Stahl recently reported to the chief's office that his outfit is responsible for tangible and calculable savings of $100 million. In addition, the Field Group has to its credit plenty of intangibles that are impossible to peg down on a dollars and cents basis.

Case histories from the files attest to the group's many and varied accomplishments.

The specifications for an air base on an offshore project called for a base course of quarried crushed stone. The stone had to be shot, crushed and hauled the six miles from the quarry to the job. Col. Orr got the specifications changed to substitute glacial gravel from a deposit just off the airfield. The saving was close to $1 million.

On a continental cost-plus-fixed-fee job, Col. Streck made recommendations that took 400 workers off the payroll. At a shotgun figure of $40 a day—counting overhead, equipment and the like—this meant a savings of $16,000 a day. The job had four to five months to run, so the total saving

THE GROUP'S SPECIALIST in electrical and cathodic protection is Lt. Col. Lindsay Applegate (left). Lt. Col. Alden Grant concentrates on mechanical problems.

was about $500,000. And what's more, production on the job made a notable increase.

Cols. Reed and Biehn made an important contribution to the use of concrete blocks in all types of military building construction. Use of concrete blocks in military construction was first accepted in 1950. However, it was not until 1951 were there any design criteria, and then they were limited to a half-page mimeographed sheet.

In December, 1952, Col. Reed suggested to Mr. Stahl that drawing up complete masonry block criteria would neutralize the Army Engineers' distaste for that type of material. Mr. Stahl arranged a meeting with top specialists of the chief's office and the Bureau of Standards that resulted in publication of design criteria for military masonry-block construction in April, 1953. A revised and improved criteria manual was prepared in January, 1954, and another revision is in the works. Today, of all wall construction by the Army Engineers, 70% to 75% is masonry block.

• **They pay the price**—These achievements are not attained without considerable personal sacrifice by the men of the Field Group. Few jobs require so much travel, so uncomfortably, to such unattractive places.

Each man of the group logs about 100,000 miles a year—by air, railroad, ship, bus or private auto. When the men travel by Military Air Transport Service, it usually involves tucking themselves among crates of eggs and vegetables or sitting within snapping range of a pair of crusher jaws.

They shrug off minor mishaps. One of the group recalls when the cabin heater failed during a flight over Greenland in 50 below weather. Another was deaf for three days after a flight in an unpressurized cabin when the pilot, dodging weather, climbed to 16,000 feet.

The impressive total of the group's air mileage would seem to tempt the law of averages, but none of them—and here they all knock on wood—has ever been in a crash. There have, however, been plenty of close calls. They've lost count of the times their planes have had to turn back because of mechanical trouble, storms or even fires aboard.

An example was a flight from Honolulu to Johnston Island that Col. Streck made. When his plane made its landing approach, the landing gear stuck and could not be lowered. The plane had to turn around and fly back 1,500 miles to Honolulu.

These men know intimately many far corners of the globe, but when they get to Omaha, where their families live, they have to ask street directions. In one five-month period, Col. Streck spent a total of less than a week at his home. When asked about his home life, Col. Biehn shrugged his shoulders. "What home life?" he said.

But their jobs have their rewards, too. As professional engineers in constant contact with some of the biggest and most fascinating construction projects in the world, the men rate their jobs high. "There isn't a job in the world that is more interesting if you're a professional engineer," said Col. Biehn.

Slow-Down in Spain

Navy replies to charges that red tape, meddling slow Spanish base jobs

Congressional charges that "red tape and bureaucratic meddling" are slowing construction of U. S. military bases in Spain were answered this week by Secretary of the Navy Charles S. Thomas in a letter addressed to Rep. William E. Hess, chairman of a House Armed Services Subcommittee that recently returned from an inspection tour in Spain.

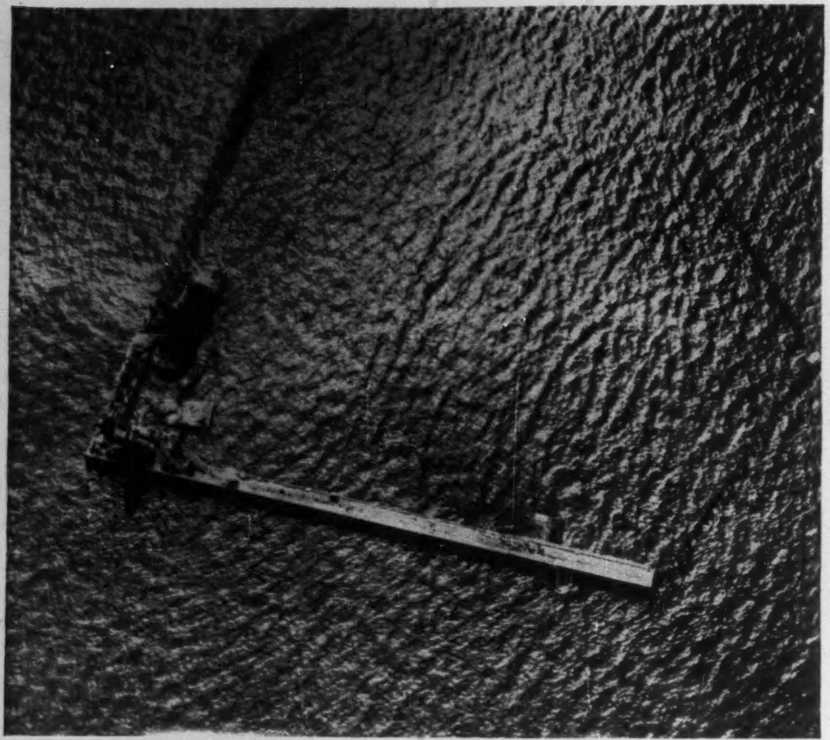
The committee accused the Bureau of Yards and Docks, charged with the base construction, of planning to interpose a cost accounting unit between the office in charge of each project and the prime contractors and architect-engineers. The effect of such an undertaking, it said, would be "to further increase costs, confuse authority and delay decisions."

It recommended that this situation be brought to the attention of the Secretary of the Navy and that positive action be taken to keep the project from being "an auditing instead of an engineering and construction job."

The controversy stems from the recent transfer of the auditing procedure from the Navy Bureau of Supplies and Accounts to the Comptroller of the Navy. In his letter to Rep. Hess, Secretary Thomas suggested that the subcommittee had incomplete information on the new auditing procedures.

Secretary Thomas denied that the auditing operation would cause any slow-down in base construction and agreed with Rep. Hess that the end to be accomplished is the building of bases. He cited the following Navy procedure with contractors to show how the auditing process would work:

- The contractor keeps the books and records in conformity with an accounting system prescribed by the Bureau of Yards and Docks with the approval of the Comptroller of the Navy.
- The contractor presents his claims (public vouchers) to the officer-in-charge of construction, and they are paid solely on his approval.
- The Comptroller of the Navy makes no review of the vouchers prior to the payment. Furthermore, the scope of the audit is being kept to a minimum consistent with the protection of the U. S. government.
- If, in the post-audit review, an exception to a payment is made, the contractor has the right of appeal to the contracting officer (the Chief of the Bureau of Yards & Docks) whose decision thereon will be final, except for the contractor's further right of appeal to the Secretary of the Navy.



NEW NAVY FACILITY is under construction 2 mi from shore in Hampton Roads.

Ammo Wharf Is Rough Weather Shelter

An unusual docking facility is under construction for the U. S. Navy in Hampton Roads. The structure is two miles from the nearest shore and stands in water 20 to 25 ft deep.

The facility will help solve problems of loading ammunition onto fighting ships in rough weather. The Navy does not permit ammunition loading at the Norfolk Naval Base. All ammo now must be barged into the open waters of Hampton Roads and loaded onto ships from the barges.

When the new facility is completed, ammunition barges will tie up there in rough weather instead of returning to naval ammunition depots. For small ships, like destroyers, ammunition also may be transferred from barge to wharf in weather that would not permit direct loading from barge to ship.

The two legs of the reinforced concrete pier measure 446 ft and 477 ft in length. Extended breakwater lines are 493 ft on one leg and 104 ft on the other. The pier rests on piling 125 ft long for straight piles and 135 ft long for batter piles. The concrete and steel piling is being cast on the job. A total of 363 piles will be driven.

At the apex there will be a platform 40x70 ft with a small concrete building to house gear and fire pumps. The breakwaters will be topped with concrete slabs 3x3½ ft. The piers will be covered with 15-ft-wide concrete slabs supported by piles at a ratio of two plumb piles to one batter pile.

Tidewater Construction Co., Norfolk, Va., has the $678,000 contract for construction of the facility.

13 Engineer Firms Compete For Virginia Turnpike Work

Thirteen engineering firms have submitted to Virginia's Old Dominion Turnpike Authority their qualifications for making engineering studies for a toll highway across the southwestern part of the state.

Following conferences with representatives of the firms, the authority is reported to have asked each to submit a proposal within 15 days so that a contract for the engineering surveys to determine the best route for the highway can be started at an early date.

Projected as a continuation of the West Virginia Turnpike across rugged country to the North Carolina line near Mt. Airy, the length of the proposed highway may vary from 67 to 78 mi depending on the route that is finally selected.

The firm of Coverdale & Colpitts, New York, has been engaged to make a traffic study of the three-state area to be served by the projected highway. North Carolina's participation in that study has been delayed by a ruling of the attorney general that funds for such a study are no longer available.

Jobs in the News

AEC EXPANSION—Fruin-Colnon Contracting Co., St. Louis, and Utah Construction Co., San Francisco, have received a $39.8-million contract for expansion of existing AEC facilities at Mallinckrodt Chemical Works, St. Louis, and construction of a new facility at Weldon Springs Ordnance Works. Maxon Construction Co., Dayton, Ohio, was awarded a $20.1-million contract for modification of several existing buildings and auxiliary facilities at AEC's Fernald, Ohio, feed materials production center. Work in both areas will be on a cost-plus-fixed-fee basis.

OIL REFINERY—C. F. Braun & Co., Alhambra, Calif., has received the contract for construction of an oil refinery at Delaware City, Del., for Tidewater Associated Oil Co., New York. Estimated cost is $75 million. M. W. Kellogg, New York, will design the catalytic cracker; Houndry Process Corp., Marcus Hook, Pa., the reformer, and Ralph Parsons Co., New York, the sulphur plant.

SHOPPING CENTER—Flett Construction Co., Kansas City, Mo., will construct a shopping center, including stores, offices and roof parking facilities in Kansas City for Oppenheimer Industries, Kansas City. Total estimated cost is $130 million.

RESEARCH LAB—George A. Fuller Co., New York, will construct a new office building and research laboratory for Corning Glass Works, Corning, N. Y. Harrison & Abramovitz, New York, are architects. Estimated cost is $7.5 million; work is to start in March.

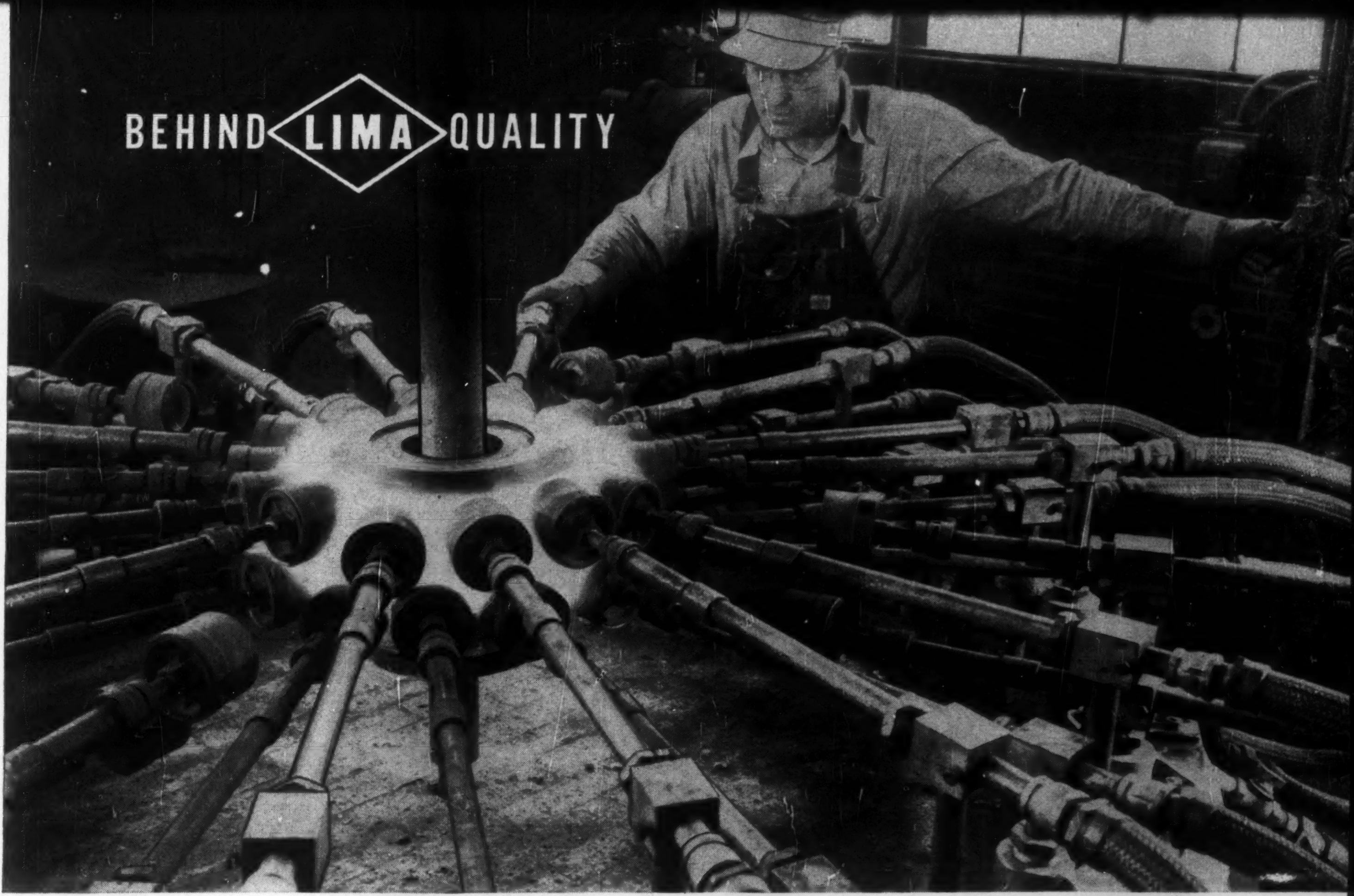
N. Y. Broker Will Pay For Paving Iowa Road

Iowa will get 5.3 mi of highway paved free of charge this year. The Iowa Highway Commission announced that it has accepted the offer of a New York bond brokerage house to pay for the paving job at an estimated cost of $223,515.

Shields & Co., the N. Y. brokers, made the offer in the hope of stimulating greater use of the $2.8-million Bellevue toll bridge over the Missouri River just south of Omaha, Neb., and Council Bluffs, Ia.

The N. Y. firm handled the bonds that financed the bridge, but so far the project has failed to pay off satisfactorily. By paving the present gravel approach road, the firm hopes to more than triple bridge traffic.

(*National Affairs cont. on p. 28*)



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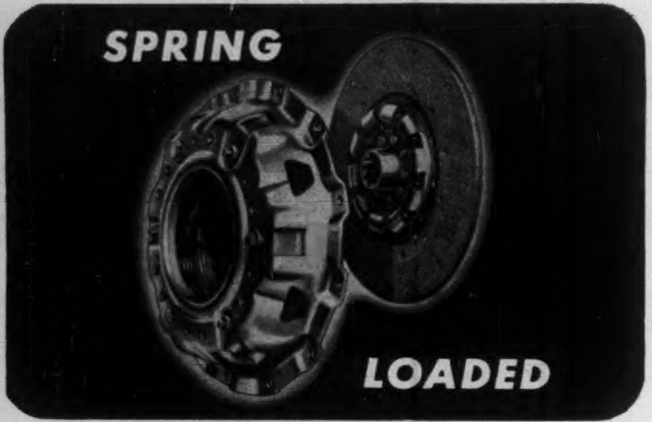

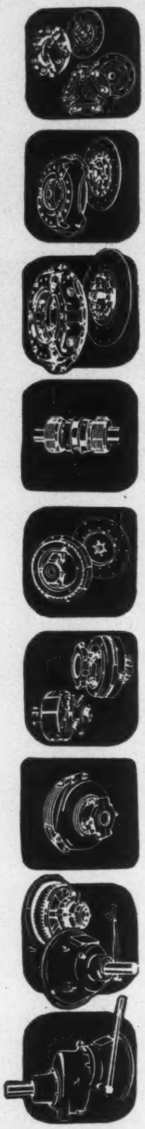

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Authority Names Engineers For California Bridge-Tunnel

The California Toll Bridge Authority has named a three-man board of consulting engineers to work on plans for a 7.7-mi southern crossing of San Francisco Bay.

Appointed to the board were Ralph Smillie of New York, P. J. Porter of Newark, N. J., and Charles E. Andrew of Tacoma, Wash. Norman C. Raab, engineer for the authority, said a feasibility report could be expected within a year.

The combination bridge and tunnel project was authorized by the California legislature, and the Corps of Engineers has granted a permit for the cross-bay portion. Raab said location of the causeway and tube crossing now are fairly well established, and detailed engineering studies are moving along. Yet to be made are traffic studies and cost estimates.

Unofficially, cost of the project has been estimated at about $200 million for the crossing and $100 million for approach freeways. Financing will be by revenue bonds to be amortized by tolls of the present San Francisco-Oakland Bay Bridge as well as by those of the new structure.

The underwater crossing is primarily responsible for the long construction period. First step will be removal of bay mud and substitution of sand fill which must settle for about 18 months. Then, 200-ft-long tubes, built in drydocks, will be floated into place and sunk. The tubes will provide a 1,500-ft clear channel with 50-ft vertical clearance and a 3½% grade limit. Total length of the underwater section will be 7,580 ft.

Allegheny Sewer Project Nears Construction Stage

Consulting engineers have been engaged by the Pennsylvania Department of Health to check cost estimates on the 31 mi of deep interceptor tunels, which will be a feature of the multi-million-dollar sewage disposal project to serve Pittsburgh and 63 surrounding communities (ENR Oct. 21, 1954, p. 23).

The action was taken preparatory to making a final grant-in-aid to the Allegheny County Sanitary Authority for the state's share of the planning costs.

Selected to review the tunnel estimates was Philip S. Miller and his staff of West Orange, N. J. and New York. Miller has supervised construction of a number of large projects, including the Baltimore water tunnels.

The authority's specifications for the project have been approved by the state and the city of Pittsburgh.

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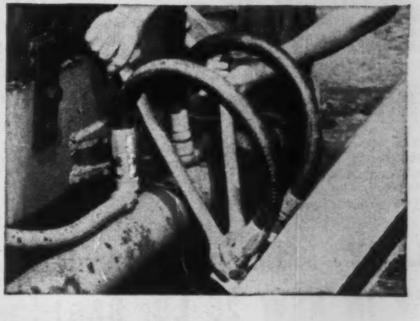

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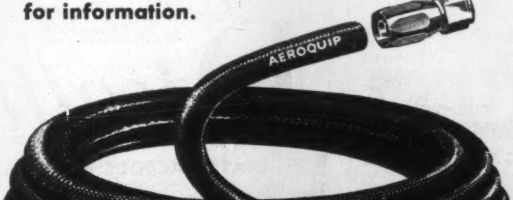

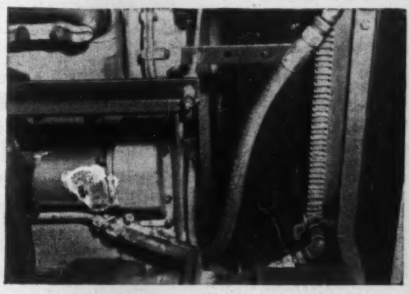

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Prestressed Pipe Voted

Akron—Over the objection of Water Superintendent Wendell LaDue, the Board of Control has permitted prestressed concrete pipe to be substituted for 6,700 ft of 24-in. cast iron pipe that had been specified in a $1.3-million contract awarded last summer for a water main project.

The change was proposed by the contractor, Charles F. Smith & Sons Inc. of Dayton, when the firm found that it couldn't get delivery of cast iron pipe fast enough to conform with the construction schedule. In its proposal for contract revision, the firm also stressed a $2.50 per ft saving on the 6,700 ft of 24-in. pipe.

Smith's original bid on the 24-in. pipe section of the project was $152,016. Alternate bids on the reopened contract: $139,515 for prestressed concrete; $156,265 for cast iron.

Bridge or Tunnel?

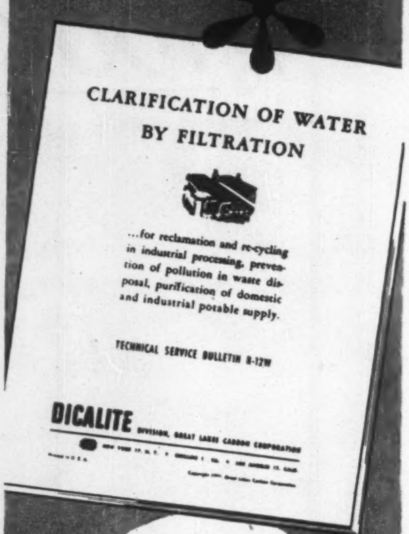
Wilmington, N. C.—A member of the North Carolina Highway Commission contends that a sunken tube tunnel would be more practical and no more costly than a proposed $11.2-million bridge across the Cape Fear River due to the soft rock river bed at the crossing site. The new bridge was the largest single item in a 10-year, $610-million highway modernization program recommended in a recent report by Parsons, Brinkerhoff, Hall & Macdonald of New York (ENR Dec. 16, 1954, p. 25).

Aquatic Park

San Diego—Dredging of a marine channel at the entrance to Mission Bay—discontinued shortly after outbreak of the Korean war—will be resumed this month under a $640,900 contract awarded to the Standard Dredging Corp. of Los Angeles.

Channel deepening is part of a $22-million Mission Bay project, which envisions an aquatic park with yacht harbors, beaches, golf courses and other recreational facilities. Participating in the financing are the city, state and federal governments, the latter with a $750,000 appropriation to the Army Engineers for channel improvements. About $12 million already has been expended on various aspects of the project.

The entrance was dredged to a depth of 7 ft (mean low tide) in a narrow channel in 1950. It was opened to small craft but silting



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caused dangerous currents, which were held responsible for a series of boating accidents that claimed 11 lives. In December 1951, the channel was closed to navigation by order of the San Diego City Council.

The new dredging contract calls for a depth of 14 ft at mean low tide. It involves removal of 1,700,000 cu yd of soil, which will be deposited a mile away at Ocean Beach in an effort to halt serious shore erosion.

End of Argument

San Jose, Calif.—A four-year delay in starting construction of a $3.9-million sewage disposal project, due to controversy over secondary treatment facilities, has been resolved by a City Council decision to build only the primary treatment plant at this time.

Except for addition of a chlorination station, plans call for the same primary treatment plan proposed four years ago. The secondary treatment plant is omitted on the theory that this decision can be made later if primary treatment proves inadequate. Bids will be called Feb. 14 on the primary treatment plant.

The original proposal was blocked by Leslie Salt Co., which objected to condemnation of 2,000 acres of its land for oxidation ponds planned for secondary treatment. In a 1951 condemnation suit, the city was unable to satisfy a jury that the company's property was necessary for the project.

The primary treatment plant is designed to handle an average 36 mgd, with maximum capacity 100 mgd. It will accommodate a 50% greater flow than is handled at present. Its design facilitates addition of increments up to double the initial size.

The plant will include facilities for mechanical screening, grit removal, preaeration, and sedimentation. Effluent will be discharged through a 60-ft outfall into an artesian slough at the south end of San Francisco Bay, with tide gates cutting off the slough. After going through digestion tanks sludge will be deposited in lagoons located on 123 acres of nearby property. The sludge will not be removed unless "it pays" to do so, an engineer said.

Hyde & Sullivan, consulting engineers, designed the plant, with a staff headed by David H. Caldwell of Brown & Caldwell.

A $3.9-million bond issue was passed in 1949 to finance the project as originally conceived, with both primary and secondary treatment. Due to rising costs, the primary plant alone is now expected to cost about $3 million.

How to trench across a stream...

Ice and the swift current of Rock River presented a formidable hazard to a contractor engaged in laying 4 in. natural gas pipe. He consulted with Sauerman engineers. The result was an efficient working arrangement using equipment best suited for that particular job. The crossing was made with minimum expense and risk.

A track cable was stretched across the river and hung so it closely paralleled the slope of the river bed. A Sauerman Crescent Scraper was attached to a single-wheel carrier which rode the track cable. Digging depth was almost automatic, since the scraper could dig no further than the length of the cable which attached it to the carrier. The track cable also served to keep the scraper working in a straight line.

The ¾-cu. yd. Crescent was powered by a two-drum hoist. Maximum span was 700 feet. One man handled the entire trenching operation. A second man was used occasionally to check the depth of the cut. Material pulled in by the scraper was removed by a small clamshell.

For complete information on this and similar projects send for Field Report 219 and Catalog J.

More "Hows" to tough problems:*

How To Clean A Muddy River — Field Report 209

How to Clean Under A Bridge — Field Report 209

How To Dig Under A Building—Sauerman News 137

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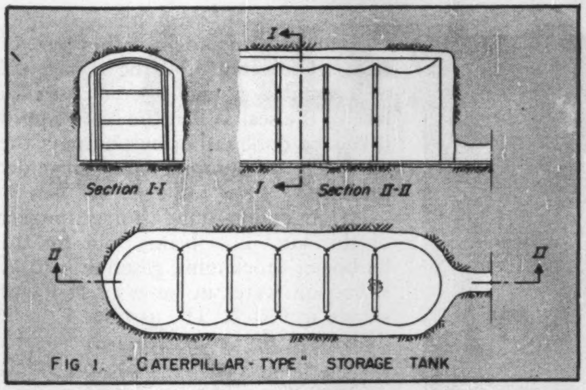

Section I-I
I
Section II-II
II
II

FIG 1. "CATERPILLAR-TYPE" STORAGE TANK

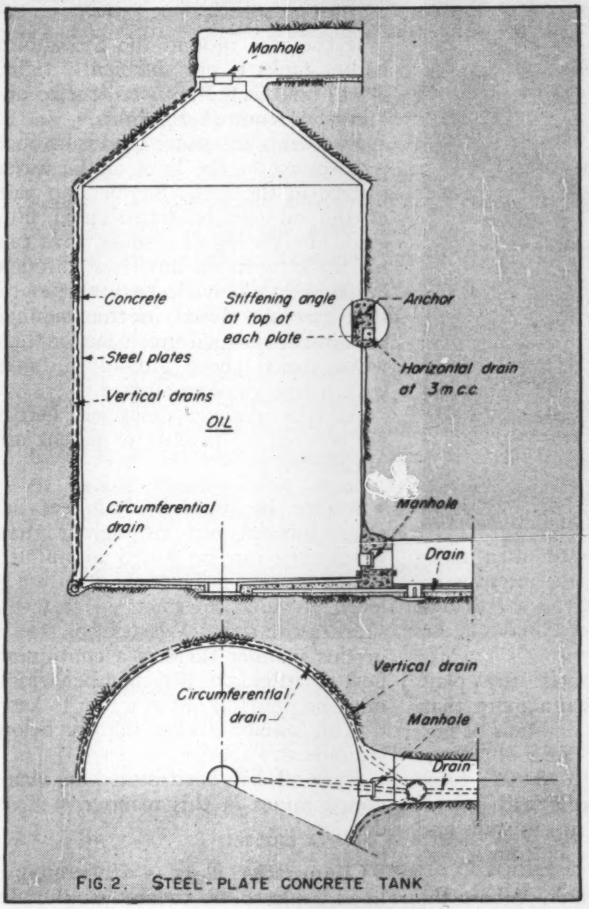

Manhole
Concrete
Stiffening angle at top of each plate
Anchor
Steel plates
Horizontal drain at 3m c.c.
Vertical drains
OIL
Circumferential drain
Manhole
Drain
Vertical drain
Circumferential drain
Manhole
Drain

FIG. 2. STEEL-PLATE CONCRETE TANK

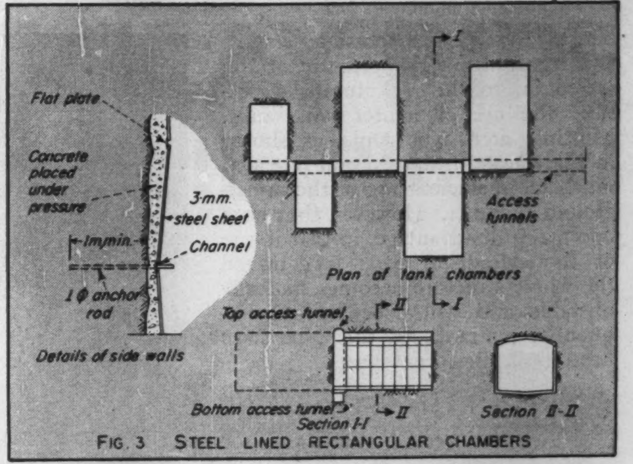

Flat plate
Concrete placed under pressure
3-mm. steel sheet
1m min.
Channel
1 ϕ anchor rod
Details of side walls
I
Access tunnels
Plan of tank chambers
I
Top access tunnel
II
Bottom access tunnel
Section I-I
II
Section II-II

FIG. 3 STEEL LINED RECTANGULAR CHAMBERS

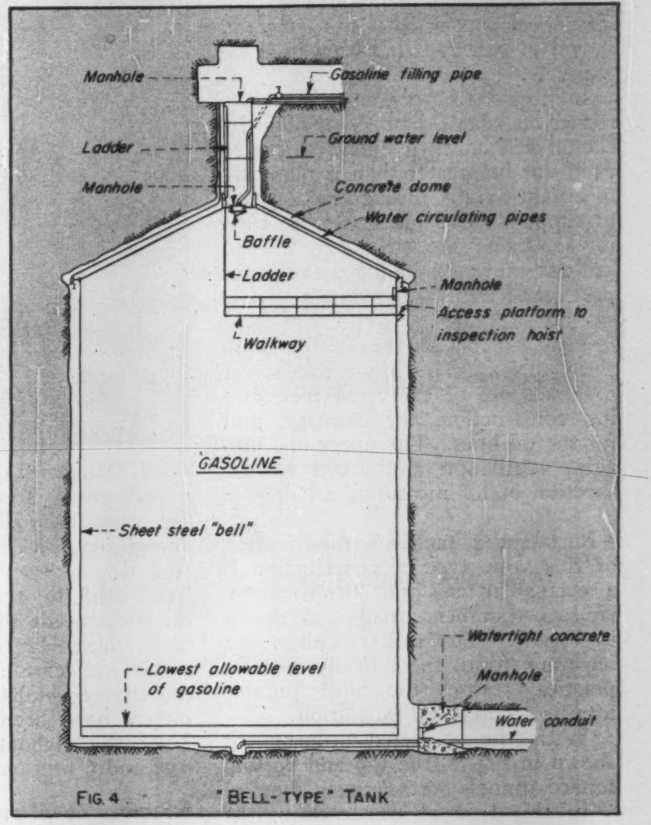

Manhole
Gasoline filling pipe
Ladder
Ground water level
Manhole
Concrete dome
Water circulating pipes
Baffle
Ladder
Manhole
Access platform to inspection hoist
Walkway
GASOLINE
Sheet steel "bell"
Watertight concrete
Manhole
Lowest allowable level of gasoline
Water conduit

FIG. 4. "BELL-TYPE" TANK

UNDERGROUND OIL-STORAGE TANKS in Sweden have developed principally along the lines shown here. The bell type tank (Fig. 4) also can be built of concrete. Its principal use is to store gasoline on water to prevent evaporation losses.

Rock Chambers Store Oil in Sweden

Unlined caverns can be used but greatest efficiency results when tanks of various types are built in the rock chambers

Herman Jansson
Former Chief Engineer
Stockholm Harbor Directorate

[EDITOR'S NOTE—This is the concluding article of four on underground work in Sweden. The first two appeared in the Dec. 9 issue, pages 33 and 37, and the third on page 41 of the Dec. 16 issue.]

Sweden with no oil wells, has to import all its supplies. Hence the storing of oils for fuel is so very important that the government gives subventions for the construction of underground oil-storage plants.

At first the government's interest was mainly in bombproof underground storage of gasoline, but now other mineral oils are being stored in that way, and more than 15 years experience in building such oil storage reservoirs has developed designs that have reduced the unit costs very materially.

The first storage rooms were built as long tunnels in which were set cylindrical tanks similar to those used for surface storage. This method was very uneconomic, as only about 50% of the volume of the rock chamber was used for oil storage.

Later designs had as their objective filling the volume of the rock cham-

(Continued on page 34)

ber to the greatest possible extent, and transmitting the pressure of the stored oil to the rock to make possible the use of lighter tank walls. Multiple arch type tanks as shown in Fig. 1 were first used and provided much more efficient use of the underground chamber. However, they have one major disadvantage, in that if one of the cylindrical parts is damaged the whole structure becomes statically unstable and will collapse. Consequently, no tanks of this type have been built in recent years.

• Concrete-steel tanks—A type of storage that makes even better use of the volume of the rock chamber and requires only light plates is a vertical cylindrical tank of steel and concrete, shown in Fig. 2. It has been used extensively.

In this tank, pressure from the stored oil is taken up completely by the rock, hence the plate thickness need not be greater than is necessary to obtain rigidity during erection and to support the concrete during placing. Drains are necessary in the walls to prevent building up of water pressure if the reservoir is below groundwater level.

Two systems of tunnels lead to these tanks. The lower one serves for transport of excavated rock during construction, for drainage, and for the oil lines. The upper one provides ventilation and access for inspection or for measuring oil depths.

• Rectangular tanks—A modification of this same type of construction is a rectangular tank built into rectangular rock chambers arranged as shown in Fig. 3. The rock chambers can have any form, theoretically, but for practical reasons the most suitable form is a horizontal excavation.

With the staggered arrangement shown in Fig. 3, the top and bottom service tunnels are relatively short.

In this type of construction, the tank bottoms are steel plates laid on a thin concrete floor, which in turn rests on a layer of broken stone for subdrainage. Walls are of thin steel plates welded to light steel girders at their edges, which are anchored with rock bolts. The space between the plates and the rock sides of the chamber, which is drained by a series of vertical pipes, is filled with concrete.

A pressure of about 3 tons per square meter is maintained on this concrete as it is being placed to make the steel plates bulge and put the sides of the tank under tension, which remains after the concrete has set. Thus the plates are kept permanently pressed against the concrete, even if heated oil should be put in the tanks.

As all pressure from stored oil is transferred to the rock, the plate thickness needs to be no more than that required by consideration of corrosion and tension. Tanks of storage capacity of 4,000 to 8,000 cubic meters have been built with plates 3 mm thick (about ⅛ in.) in walls and roof and 6 mm on the bottom.

FUEL OIL stored on water in an underground cavern. Because the cavern is below groundwater level, no oil is lost through crevasses.

• Storage of oil on water—Where the rock chambers are below groundwater level, light mineral oils can be stored on water advantageously.

A type of tank developed for this purpose is shown in Fig. 4. It consists of a cylindrical steel shell, open at the bottom and closed at the top. Because the oil is lighter than the water, the walls and roof are exposed to an interior pressure that is determined by the difference between the specific gravity of water and oil. There also is an upward pressure that must be taken by the rock above the chamber.

The top may be conical, as in Fig. 4, or it can be a dome. If the latter, there must be a ring at the abutment of the semi-sphere to transfer the upward pressure to the rock.

As oil is pumped into this type of tank, the water must be drawn off to a suitable storage reservoir or to a lake or the sea. When the oil is tapped it can be done either by pumping the oil out or by pumping water in under pressure.

At an underground storage project of this kind now being built for the harbor of Stockholm, gasoline is to be stored on water in tanks of the type shown in Fig. 2. The gasoline is to be drawn off by connecting the water system to a reservoir that will create a pressure equal to a water column 30 to 40 meters high.

If the rock around the Stockholm harbor tanks is not sufficiently tight, it will be injected with cement to obtain the required tightness.

By storing oil under a pressure that is governed by the level of the water surface in the rock chamber, no part of the oil can be transformed into gas. The storing of gasoline thus can be made without any loss through evaporation. It has even been proved that gasoline stored in this manner remains unchanged much longer than when stored above ground in tanks with a free gasoline surface.

All the designs described herein are covered by patents or patent applications.

• Storage in unlined chambers—Because mineral oils are lighter than water they can be stored in unlined rock chambers below groundwater level, provided there are no great fissures in the rock. When oil is stored in this manner there is a continuing flow of water into the chamber which must be pumped out at a rate to keep the oil surface always slightly below groundwater level.

Fuel oil has been stored in abandoned mines in this manner in Sweden.

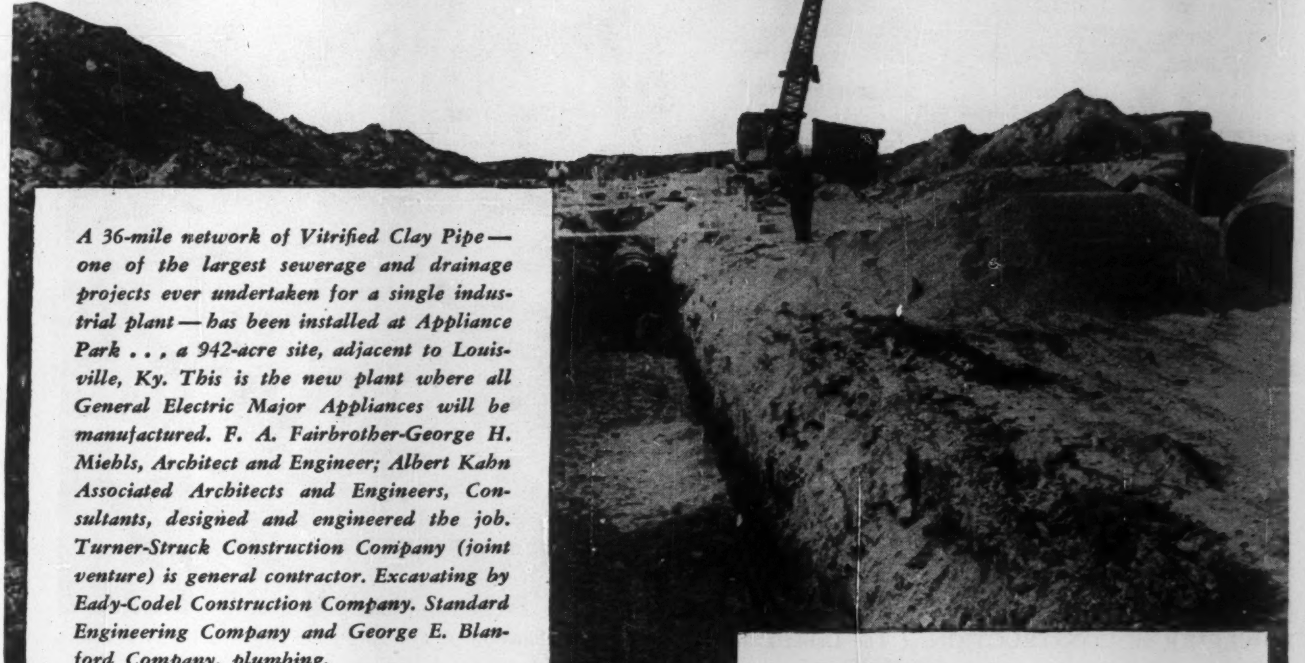
• Comparative costs — Underground lined tanks built to any of the designs shown in the accompanying drawings cost about the same, depending on local conditions. The cost of lined tanks in Sweden is about twice that of ordinary storage tanks above ground for storing volumes in the range of 3,000 to 6,000 cubic meters. When the volume is increased, the comparison will be more in favor of underground storage.

As to gasoline, however, because of its high cost in Sweden, the saving due to elimination of evaporation losses when stored underground, will soon offset the difference in cost between underground storage and surface storage.

Unlined chambers, naturally, are cheaper than lined tanks and cost about the same as tanks above ground.

36 MILES OF CLAY PIPE

serve New Louisville Plant



A 36-mile network of Vitrified Clay Pipe — one of the largest sewerage and drainage projects ever undertaken for a single industrial plant — has been installed at Appliance Park . . . a 942-acre site, adjacent to Louisville, Ky. This is the new plant where all General Electric Major Appliances will be manufactured. F. A. Fairbrother-George H. Miehls, Architect and Engineer; Albert Kahn Associated Architects and Engineers, Consultants, designed and engineered the job. Turner-Struck Construction Company (joint venture) is general contractor. Excavating by Eady-Codel Construction Company. Standard Engineering Company and George E. Blanford Company, plumbing.

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A sewerage system doesn't have to be a patchwork of various materials. When you install Vitrified Clay Pipe, you can get all the fittings you need, Y's, T's, elbows. For example, this Vitrified Clay Cut Elbow permits turns and angles in the line that afford utmost flexibility and speed installation.

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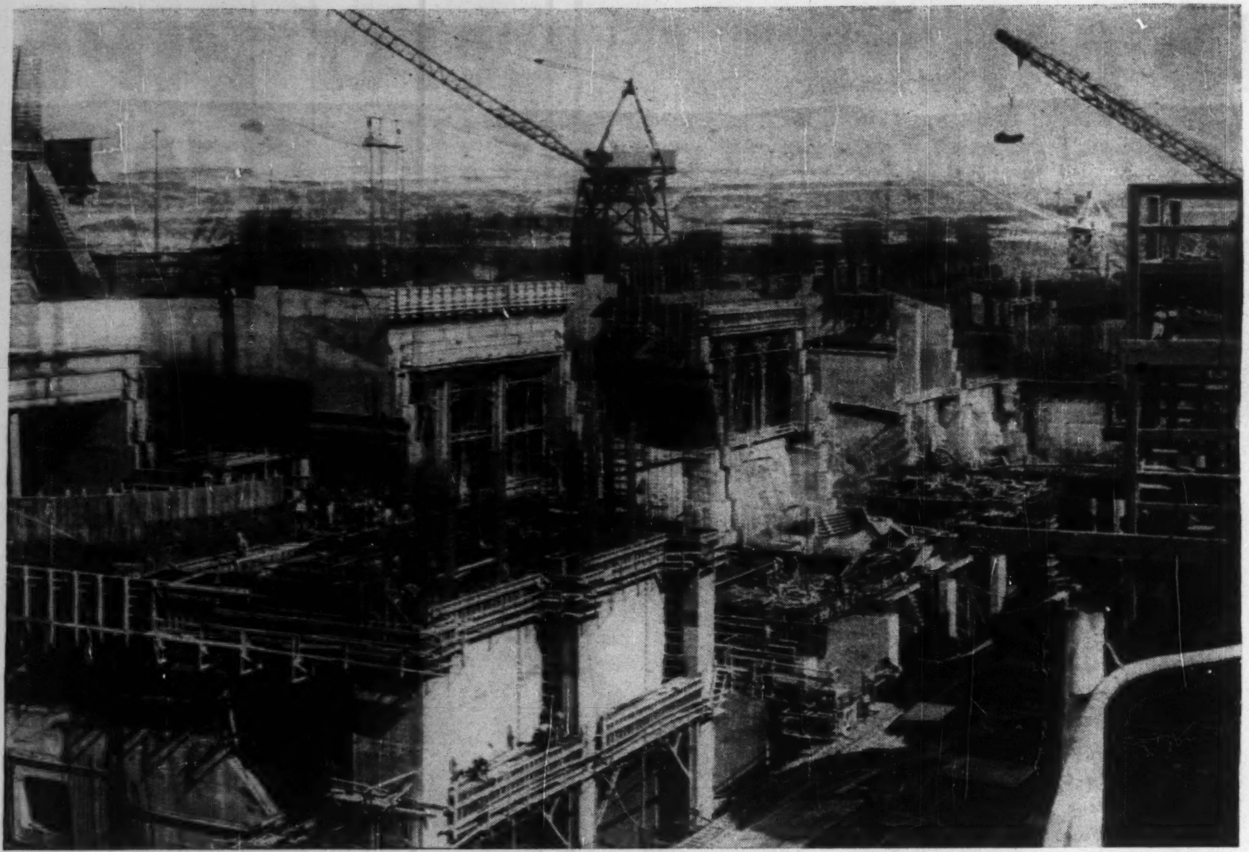


POWERHOUSE CONSTRUCTION at The Dalles Dam is a complex combination of a gravity dam and multi-story building.

Concreting at The Dalles Dam

Different production and placing methods used by two contractors on $310 million Columbia River giant

Construction of The Dalles Dam—including such pertinent features as its powerhouse and navigation lock—is divided into several contracts. And that fact affords an opportunity to compare methods used by different contractor groups under conditions that are somewhat similar.

The most direct comparison can be made on aggregate production and concrete placing for this $310 million Columbia River power and navigation structure, which will have an initial generating capacity of 1,122,000 kw.

The dam is of the run-of-the-river type, with a spillway section and powerhouse section blocking the river flow. Thus, concreting does not involve huge quantities of mass concrete.

The 2,150-ft long powerhouse is essentially a building—but a building that must have the strength characteristics of a 90-ft high dam. The spillway section does have a substantial quantity of mass-type concrete.

Differences in aggregate production as well as concreting can largely be attributed to different requirements for spillway concrete as opposed to powerhouse concrete.

There are four major construction contracts underway, but only two contractors: The Dalles Powerhouse Constructors hold a $30 million contract for powerhouse substructure construction including 14 main unit bays, the station service bay, the fish turbine bay, and the assembly bay; Atkinson-Ostrander Co. hold contracts for (1) the $14 million spillway dam; (2) eight powerhouse bays as well as a fish ladder and a section of concrete nonoverflow dam, at $19 million; and (3) a $13 million navigation lock and additional ladder facilities.

(Reasons for splitting the construction into several contracts—others will follow—were detailed in ENR Oct. 22, 1953, p. 29.)

• **Aggregate production**—Raw aggregate for The Dalles Dam is obtained from a borrow pit three miles from the job. The supply is deficient in sand, and the available sand is gap graded.

Methods of making up these deficiencies are the primary difference in aggregate production.

Atkinson-Ostrander Co., with a plant at the dam site, crushes excess sizes to make the required sand. The Dalles Powerhouse Constructors has subcontracted aggregate supply to Curtis Gravel Co. of Spokane. The subcontractor's plant is at the borrow pit, and he imports additional sand via an 11-mile truck haul. Screened aggregate is delivered to The Dalles Powerhouse Constructors' batch plant at the dam, in condition ready for use.

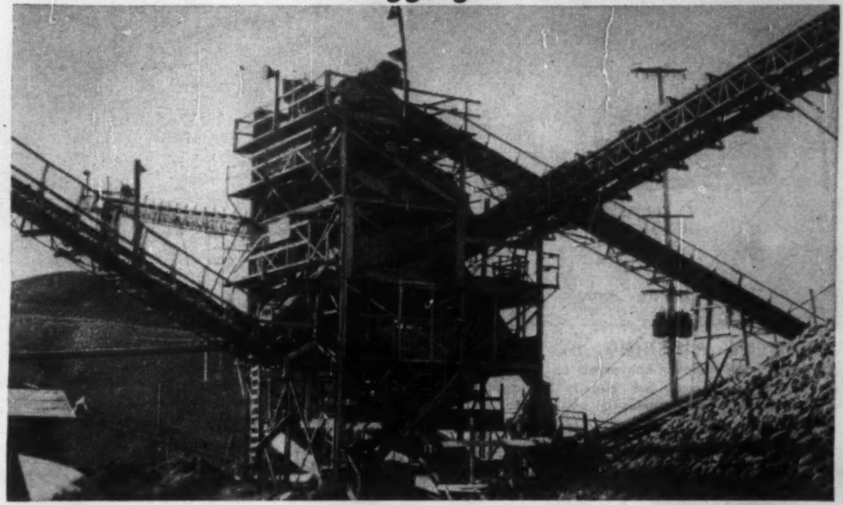
The first Atkinson-Ostrander contract was for the spillway dam. In-

Table I—Sand Specifications At The Dalles Dam

	Spillway % by weight retained		Powerhouse cumulative % by weight passing
Sieve #	Min	Max	
4	0	5	95–100
8	5	15	80–90
16	10	20	55–75
30	20	30	30–60
50	20	30	12–30
100	12	22	3½–10
200	4	6	......
Pan	2	4	......

Here are major concreting differences:

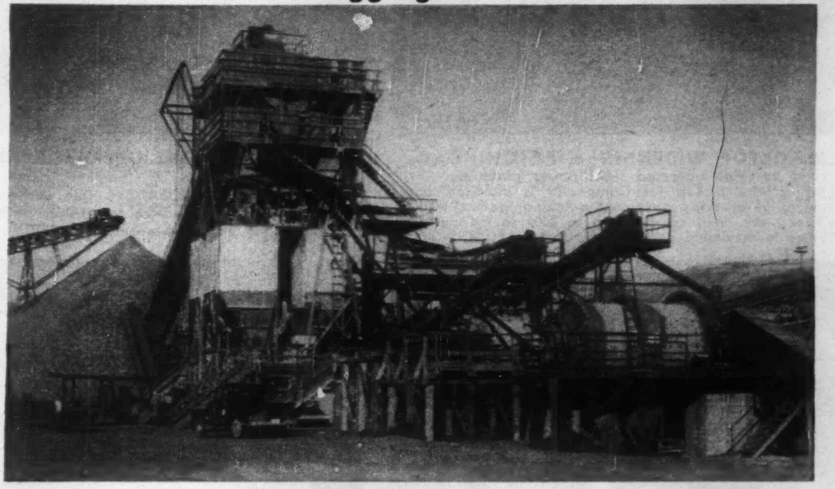
One contractor screens aggregate and transfers concrete . . .



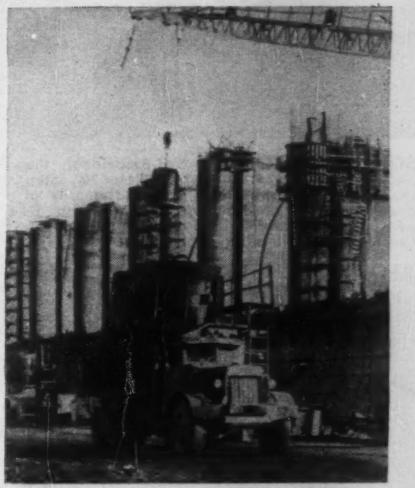
SCREENING PLANT furnishes aggregate for one contractor. Sand deficiencies are made up from another source.

TRUCK DUMPS into 4 cu yd bucket. Fast dumping minimizes segregation.

. . . the other crushes aggregate and hauls concrete buckets.



ROCK CRUSHING EQUIPMENT is included in aggregate plant for Atkinson-Ostrander Co. to make up deficient sand requirements.



TRUCK HAULS two 4 cu yd buckets. Rail haul was also used on spillway.

cluded was much mass concrete with relatively lean mixes (2½ sacks per cu yd).

Sand gradation is important in lean concrete, with relatively high percentages of fines required to insure full coverage of aggregate particles. Accordingly, a tight sand specification was written for the spillway contract that included close control of fine sand particles. It was largely to meet this specification that Atkinson-Ostrander went to a crushing operation.

There were, of course, other reasons: production could be developed that would be valuable in case other contracts were successfully bid. (This proved out. Subsequent to construction of aggregate facilities, Atkinson-Ostrander was successful bidder on two additional major contracts.)

Reasons for different location of the aggregate producing facilities are fairly obvious too. The Dalles Powerhouse Constructors, working through a subcontractor, found it better to have the subcontractor work away from the crowded dam construction area. The Atkinson-Ostrander crushing plant, on the other hand, requires lots of water (some 2,000 gpm) and adequate drainage—neither of which are available at the site of the aggregate pit.

Crushing facilities include two rod mills for sand production as well as one primary jaw crusher and four secondary standard cone crushers to break gravel into sand sizes. The plant also includes screw classifiers and sand sizers.

Atkinson-Ostrander stockpiles include 3,700 cu yd of 6 to 3-in. rock, 2,700 cu yd of 3 to 1½-in. rock, 2,400 cu yd of 1½ to ¾-in. gravel, 2,100 cu yd of ¾ in. to #4 screen gravel, and 7,800 cu yd of sand. The disproportionate amount of sand storage is necessary since sand must be drained for 72 hours before used.

• **Concrete placing**—Basic difference in the concrete placing procedure is

(Continued on page 39)

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MACADAM DENSIFICATION. Usually just one pass of the Jackson Multiple Compactor is required to key 12" of rock to final density — one pass to completely fill voids with fines.

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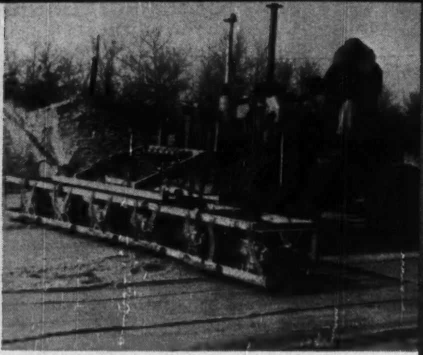
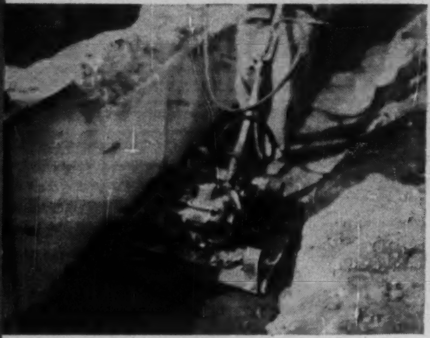


GRANULAR SOIL FILLS. The Multiple Compactor quickly achieves specified density, gets into places bigger, more expensive equipment cannot reach. Individual units can be detached, operated as manually guided compactors.



SOIL COMPACTION. Self-propelling, the JACKSON COMPACTOR, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 8" to 10" depths at 2000 sq. ft. per hr. Perfect for bridge and pipe line fills, concrete floor sub-bases, etc.

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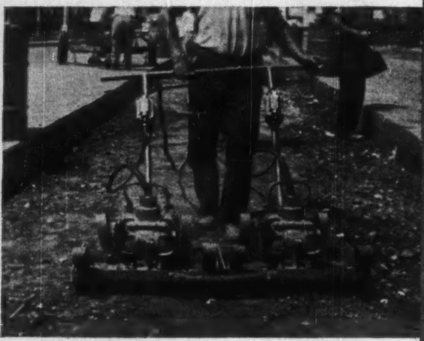
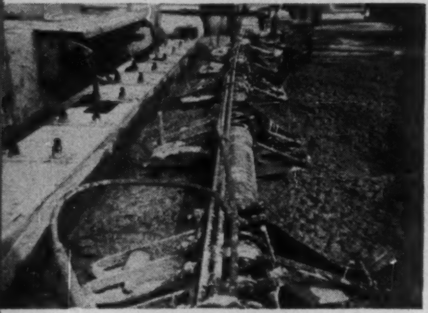
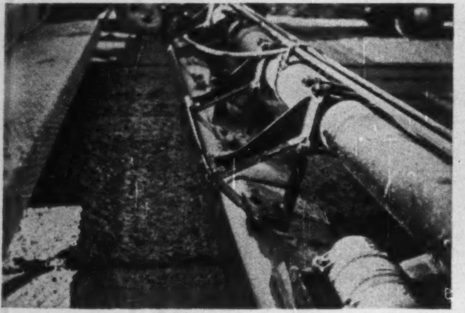


TWIN-UNITS — ONE OPERATOR. With a two-unit, side-by-side or tandem hookup of JACKSON COMPACTORS, one man can readily do the work of two, since the compactors are self-propelling and he has only to guide them.





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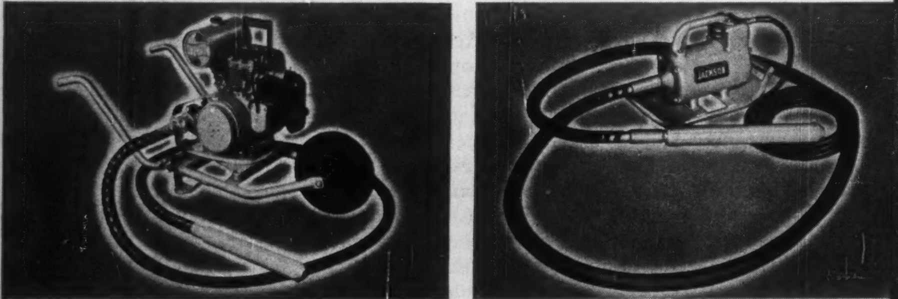

GENERAL CONSTRUCTION

(Left); 6 H.P. engine-driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 2½ H.P. electric vibrator (for light-socket operation). Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.

that between dump trucks and buckets. The TDPC organization uses quick-dumping trucks to haul the mix from their batch plant. The trucks transfer concrete to 4-cu yd buckets that are handled by gantry mounted cranes, the truck dumping action being swift enough to prevent segregation. (The concrete hauling trucks are modified Koehring dumptors, modifications include special end gates to keep concrete from dribbling; rounding corners to minimize stickage. The 4-cu yd buckets have been altered from round to square tops to fit the concrete-hauling trucks.

Atkinson-Ostrander hauls concrete buckets on either trucks or rail cars. Diesel-electric locomotives hauling cars with three or four 4-cu yd buckets were used almost exclusively on the spillway work. For the powerhouse work—located some 2,500 yd from the batch plant—truck haul is used.

Both contractors have similar batching and mixing installations, with four mixers each of 4-cu yd capacity.

In contrast to many other Corps of Engineers dams built since World War II, there is no extensive cooling of concrete required at The Dalles Dam. Gravel stockpiles are sprinkled for such evaporative cooling as this will afford. And, except for extremely long pours, concrete placing is prohibited on the day shift during the months from June to September when daytime temperatures are likely to be high.

Concrete placing started in December, 1953, for the spillway dam. First powerhouse concrete followed shortly thereafter. During the 1954 summer season, total concrete production averaged about 4,000 cu yd a day with some days reaching better than 6,000 cu yd. This was split about half and half between the two major contractors.

TDPC concrete production was stopped for a 28-day period after collapse of their batch plant (ENR June 10, 1954, p. 26), attributed to a structural failure in the bins. But fortunately a new plant was almost immediately available—the one that had been used by Consolidated Builders at Detroit Dam. In spite of the four-week loss of production, TDPC concrete work is back on schedule now with about half of the required total concrete production completed.

Atkinson-Ostrander Co. is just getting well started on its portion of the powerhouse. But concrete plant production has been kept at a fairly even figure. Spillway concreting that reached a maximum of 1,800 cu yd a day has fallen off to around 800 cu yd a day. But the slack has been taken up by the needs of the Atkinson-Ostrander powerhouse contract. And by late winter, after excavation work is well along, concrete will be needed on the navigation lock.

Some 900,000 cu yd of basalt rock excavation is involved in the navigation lock work. And there will be a quarter of a million cubic yards of concrete.

The Dalles Powerhouse Constructors started work on the powerhouse with a complete set of steel forms. These have been supplemented with some wooden forms as more were needed.

One thing the two contractors have in common on their powerhouse work is a reinforcing steel subcontractor—a joint venture of Steel Construction Co. and Rutherford & Skoubye. This firm was already on the job working for TDPC when Atkinson-Ostrander got their powerhouse contract, and it was expedient to make use of the subcontractor's experience on the rest of the powerhouse work.

• **Design economies**—Originally, The Dalles Dam was tabbed as a $350 million job. In the past year, however, savings indicate that the project can be constructed for $40 million less. This cost reduction together with a substantial fiscal 1955 appropriation—$42 million—has kept the schedule to first power in 1957. A year ago it looked doubtful that that schedule could be met because of high appropriations needed.

Cost reduction comes from two sources: bidding competition that has been such that awards are lower than expected; perhaps even more important, careful and complete designing. For example, after complete model studies at the Corps of Engineers Bonneville hydraulic laboratory it was decided to raise the approach channels 30 ft. In other words 30 ft of excavation in the river bed will not be needed. And, according to the model studies, this will have no effect on the power head.

Another saving has been obtained by putting everything into the construction contracts. An example of this is the spillway contract where the general contractor provides all equipment for building and equipping the tainter gates. On previous jobs, the government had furnished some of these items, thus increasing uncertainties for the general contractor.

Next contract to be bid at The Dalles will be for additional powerhouse work. This will total something under $20 million and will involve superstructure for powerhouse units 1 through 14.

The only other major construction contract will be the closure dam to be bid in mid-1955.

• **Credits**—The Dalles Dam is a project of the Portland District, Corps of Engineers, Col. James U. Moorhead, district engineer. Design has been carried out under the direction of Ben L. Peterson, chief of the Engineering Division. John Kemple is chief of the Construction Division. H. B. Elder is resident engineer.

The Dalles Powerhouse Constructors is a joint venture of nine midwestern contractors headed by Donavan Construction Co. A. R. Bacon is project manager, C. F. Palmetier is project engineer, and J. D. Heckart is general superintendent.

Atkinson-Ostrander Co. is a joint venture of Guy F. Atkinson Co. and Ostrander Construction Co. John Morton is project manager, Joe B. McNabb is project engineer and Vernon Bradley is general superintendent.

Table II—The Dalles Dam—Major Construction* Contracts

						Concrete		Excavation	
Contract	Contractor	Cost (millions)	Started	Completion Date	% Complete Nov. 1 ,1954	Total (cu yd)	In place Nov. 1 (cu yd)	Total (cu yd)	Excavated Nov. 1 (cu yd)
Powerhouse excavation and cofferdam	S. A. Healy Co.	$5	Feb. 14, 1952	Jan. 13, 1954	100	....	....	2,204,107	2,204,107
Spillway dam	Atkinson-Ostrander	14	Oct. 29, 1952	Dec. 31, 1955	64	340,997	213,000	2,145,347	2,100,000
Powerhouse, Units 1 to 14	The Dallas Powerhouse Constructors	30	June 8, 1953	Dec. 1, 1955	49	613,291	294,000	528,000	480,000
Powerhouse, units 15 to 22	Atkinson-Ostrander	19	June 21, 1954	Apr. 15, 1956	17	250,600	49,000	314,310	295,000
Navigation lock	Atkinson-Ostrander	13	Sept. 29, 1954	Oct. 1, 1956	1	247,000	....	911,000	10,000
Powerhouse superstructure	(not bid)	abt 19	(to be bid Jan, 1955)			....	....	....	....
Closure dam and cofferdam removal	(not bid)	abt 13	(to be bid mid-1955)			....	....	....	....

*Supply contracts for turbine, generators and gates totalling $32 million have been awarded. Additional generator bids are yet to be called.

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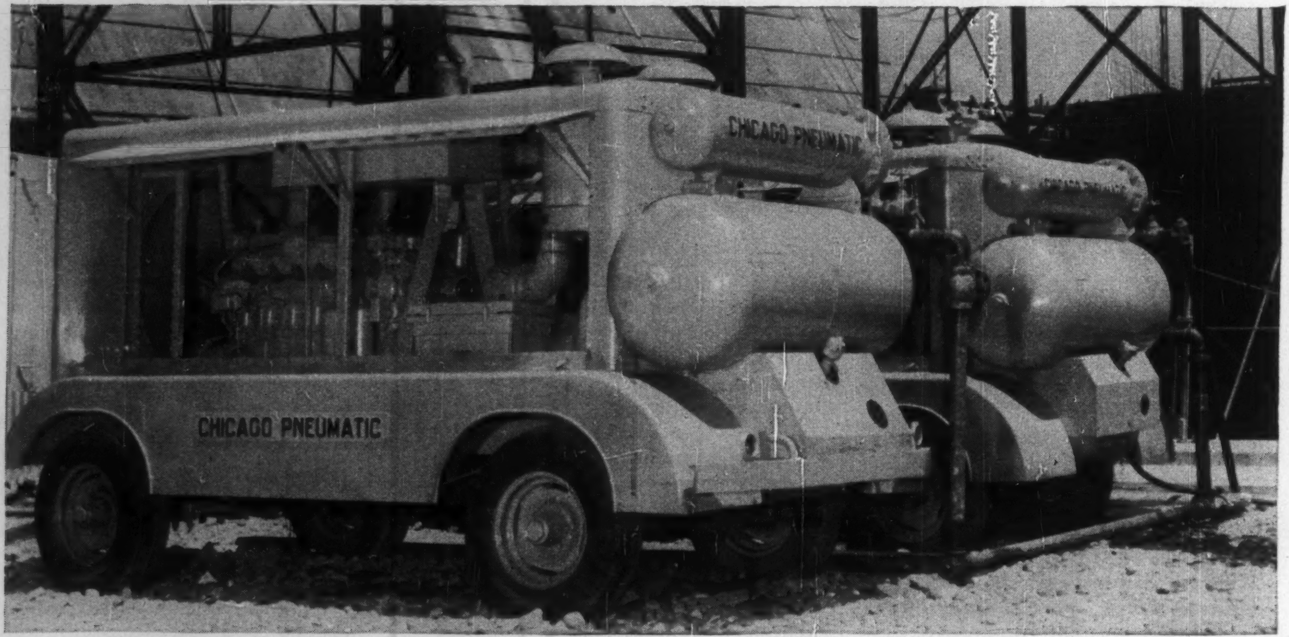

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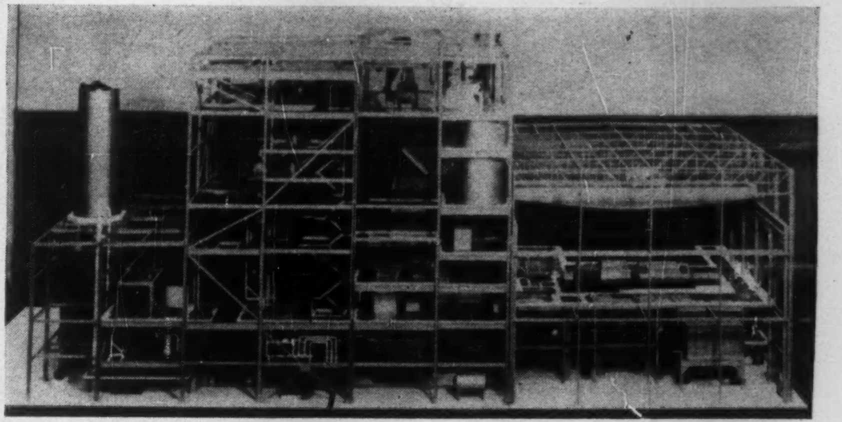
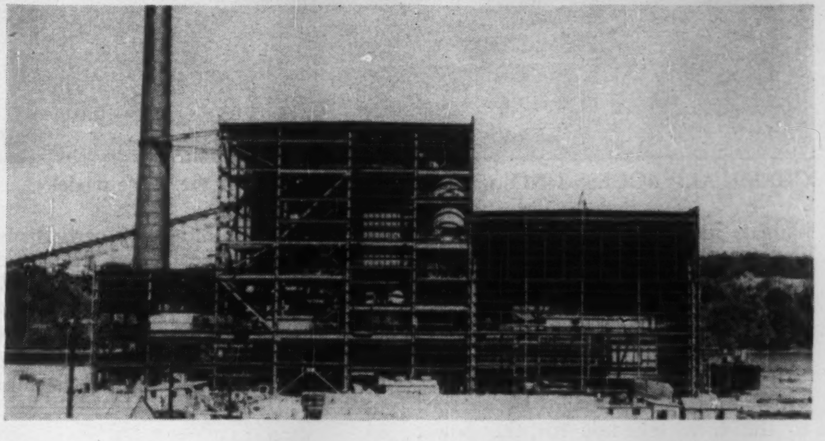


MODEL of a power plant was a valuable tool in laying out piping and equipment during the design stage.



PROTOTYPE of the power plant was erected without trouble from interferences, thanks to model studies.

Models Speed Plant Design, Cut Costs

Experience with plastic models shows many benefits, including lower design costs, for complex structures

W. E. Hopkins
Mechanical Engineer, and
C. T. Chave
Asst. Chief Engr., Badger Process Div.
Stone & Webster Engineering Corp.
Boston, Mass

Rising drafting costs and the development of new materials for model construction may well have started a trend toward use of small-scale models as a standard tool for plant design.

Stone & Webster Engineering Corp., for one, has been using models for design since 1950. Its experiences hold some valuable lessons for others seeking to follow the trend.

In the past, lower costs permitted preparation of special drawings to aid in visualizing designs. But at current wages, such drawings are too expensive. A model can serve as an alternative and, when properly used to develop a design, may also eliminate some usual drawings and sketches that would otherwise be necessary.

The principal new materials used for model construction are transparent plastics, such as Lucite and Plexiglas, now available in rods, bars, and sheets, which can be quickly machined and easily bent. These materials make it possible to build models faster than drawings can be made.

Cost is low, too—probably about 0.2% to 0.5% of the cost of the structure duplicated by the model. Consequently, it is now economically feasible to use models more frequently than in the past as an aid in plant design.

However, different approaches are needed for different types of plants. That is what S&W learned on the first two major applications—one a power plant, the other a chemical plant.

• **Power plant design**—Principal factor affecting the approach to model design for the Middletown (Conn.) station of the Hartford Electric Light Co. was the time required for delivery of a 66,000-kw turbine-generator. Development of the design could be spread out over a period of three years, because the manufacturer of the equipment promised shipment in 31 months. The pace of the design work thus permitted use of a progressive type of model.

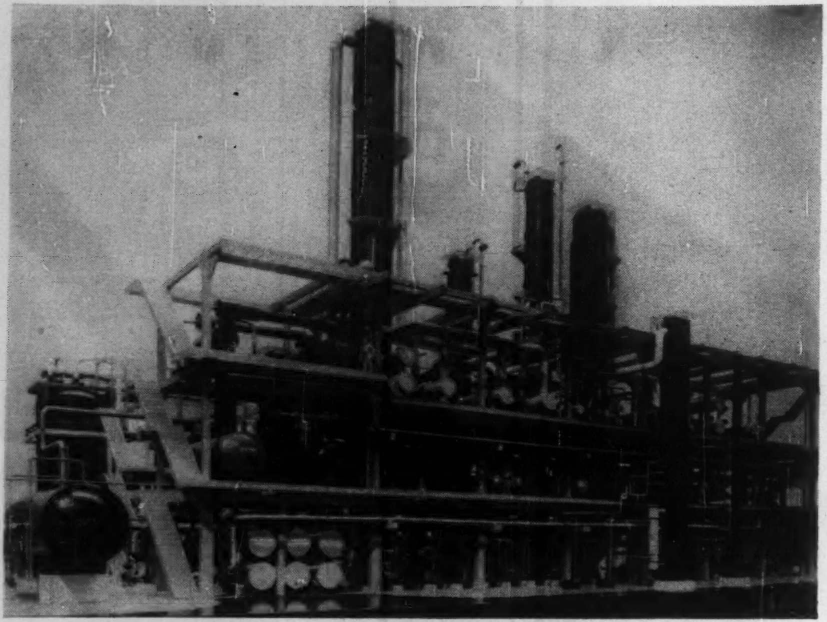
The model was constructed by Atkins & Merrill, Inc., in a shop at Sudbury, Mass., then transported to the S&W office in Boston, to aid in the development of piping and electrical systems, arrangement of auxiliary equipment and other features of the design. The scale was $\frac{3}{8}$ in. = 1 ft.

A schedule was set up for construction of the model that would dovetail into the schedule for design of the plant. The model builders were sent a copy of the drawing schedule marked to indicate the drawings that would affect the model. Tentative dates were then established for completion of various phases of model construction. And an engineer was assigned to act as liaison between the model builders and the designers.

As soon as the model was delivered to S&W, the designers were requested to use it while preparing drawings. When available, design prints were sent to the model builders, who checked the layout, reported any interferences discovered and suggested changes that appeared desirable.

For some items—such as spring

(*Continued on page 42*)



CHEMICAL PROCESS UNIT was designed with the aid of the above model.

hangars for piping and equipment—it was found best to prepare drawings from visual examination of the model. Also, complicated layouts, such as the pipes from four coal pulverizers to 12 burners, were developed on the model.

• Chemical plant design—In contrast to the time schedule for the power plant, the chemical process plant for Monsanto Chemical Co. at Texas City, Texas, had to be built in a short time. Not only was it necessary to order equipment quickly but also that the general arrangement and design of piping be established as soon as possible. A large staff of designers was needed for a short period, whereas for the power plant a moderate-sized staff was employed for a long time.

The first step was to build a basic model in the shop. This model consisted of open steel structures mounted on tables in proper relative locations together with replicas of major equipment.

• Exact sizes not needed—It was soon discovered that the steel plans did not have to show the final sizes of members. Single-line sketches, with approximate sizes given in notes, sufficed. These could be prepared by an experienced steel designer by inspection. However, while the exact diameters of heat exchangers were not required, the model had to show the correct number of shells per battery and the flow arrangement. Sizes for process pumps to be represented were selected from manufacturers' bulletins. And models of fractionating columns were made with removable skirt pieces, so that skirt heights could be adjusted.

While the basic model was being built, piping studies were carried out on the drawing board and the layout of some of the major lines developed. When completed, the model was moved to engineering headquarters, where the model builders continued under the direct guidance of an engineer.

• Model helps with piping—Minor changes soon were made in the model, as indicated by piping studies. Then, equipment was positioned and studied for possible interferences with the piping. Finally, piping work was started.

Pipes were represented by plastic rods bent to the proper shape and attached to the equipment with brass pins. Not all piping was included; those with diameters 3 in. and less generally were omitted. After the design was approved, the rods were spray painted in accordance with a color code.

• Drawings follow model study—The first model for a unit of the Monsanto plant was constructed from design drawings, as was done for the Middletown Station. In subsequent models, however, piping, which is a major component of a chemical process plant, was installed before preparation of design drawings.

With this novel procedure, as the piping installation expanded problems constantly arose, requiring consultations between the model builders and engineers. Modifications were made as work proceeded, to improve the layout. Meanwhile, pipes were checked for expansion stresses.

Before a model of a unit was completed, work was started on the design drawings, though more efficient use could have been made of manpower by waiting until the model was finished. Layout of piping in a ¼-in. scale model of a typical distillation unit in a structure 150x40 ft took about ten weeks.

Experience showed that it was not necessary to make the completed model conform to all the desirable changes. In many cases, changes were merely noted on sketches for use in preparing the final drawings.

• Drafting is simplified—Completed models were placed in locations convenient to the piping draftsmen. Inspection of the models permitted selection of pipe locations that would avoid interferences, but it was found undesirable to determine dimensions by measurements on the model. All projections could be seen at a glance, and the need for mental visualization was largely eliminated.

It is noteworthy that a set of assembly drawings made from a model after detail runs had been sketched for fabrication could be made much faster than normal practice would allow. Fewer dimensions and views were required for field erection than for fabrication detailing. Less checking was needed, and more information was available to the checker. Furthermore, special studies and views for checking purposes could be eliminated to a large extent, because these views could be seen on the model.

Designers had to show good judgment in selecting sequence of piplines placed in the model, so as not to create interferences, because "erasures" were costly. It was important for the designers to determine the location of major piping runs one at a time and prepare sketches of these for the model builder who installed replicas in the model. In this work, model builders, making up piping runs as fast as sketched, were able to keep up with the designers.

• Other benefits—Aside from the tangible benefits in basic design improvements, the models served as a proving ground for completed drawings. As a result, during erection of the Middletown Station, which was completed earlier this year, no interferences were reported on the work covered by the model.

The model of the power plant also proved of great value in the layout of the communication system. It helped in a major way in determining placement of equipment to obtain minimum interference with acoustic requirements.

The model of the chemical plant facilitated field work, where the problem of reading drawings is even greater than in the design office. The final step in using a model, therefore, is to ship it to the construction office, where it will be available to construction supervisors and foremen.

Drafting time for piping in a large chemical plant frequently is about ten or more months. Following is a comparative time schedule in months for design with and without a design model:

	No model	With Model
Studies	3	3
Drawing	3	2
Checking	3	2
Fabrication	2	0*
Erection, extra	2	2
	13	9

*Fabrication time with a model is concurrent with drawing and checking.

When a model is used for design, more men are needed in making and checking the drawings; so the manpower saving is not as great as the time saving indicates. However, it is clear that proper use of a design model can speed up a job, and the capitalized value of this time is a large sum.

• **Disadvantages**—While models offer many benefits, there also are some limitations. One is the capacity of professional model builders. There are only a few capable model builders in the U. S. today; hence, the entire industry would be quickly overwhelmed if only a few of the projects now under way required the use of models.

Another obstacle is the traditional resistance of designers to a new tool, whereas the success of the model technique depends on the guidance designers give the model builders. It is, therefore, unwise for any engineering company to proceed faster than it can convince designers to use models with enthusiasm.

• **Scope of model studies**—Models may prove of no advantage if not applied to the proper types of problems. They are most useful for complicated, nonstandard designs, especially when the client is critical and wishes to participate in design development, or when speed of construction is of the essence. Models also are useful when drafting will be done at a location remote from the engineering office. For example, a job designed by engineers in the U. S. to be drawn up in a foreign country might well be handled by making a model in the U. S. and shipping it abroad.

Because of the advantages of model studies, use of models should gradually increase. The time will come when they will be as much a part of engineering tradition as drawings.

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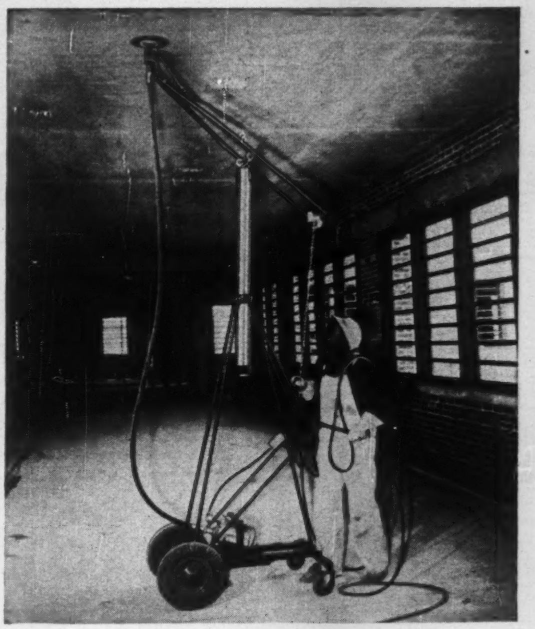

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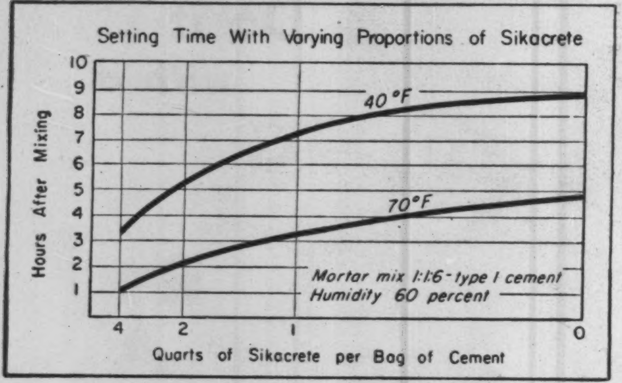
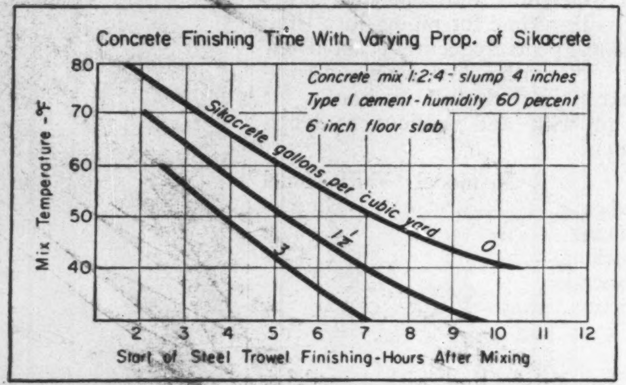




Accelerating Densifier Aids Winter Concreting

Sikacrete is the name of a new concrete additive said to bring the slow setting time of cold weather concrete back to normal, or even above normal if required. This increased setting and hardening speed reduces the length of time that freshly placed concrete must be protected during freezing weather and speeds stripping and finishing. In masonry construction, the addition of Sikacrete is reported to maintain job progress at cold temperatures and permit laying of higher courses and earlier tooling of joints.

The additive is an aqueous solution containing balanced proportions of an approved accelerator and a densifying agent. The densifying agent, by controlling cement-gel formation, is said to reduce shrinkage and increase workability, density, uniformity and strength. Further, it is said to provide increased water resistance and surface hardness.

When using Sikacrete, the sand, aggregate or cement proportions do not have to be adjusted. The water content is reduced by the volume of Sikacrete added and, in addition, by one quart of water per bag of cement—improved workability permits this further reduction of water content.

Since the additive does not act on the aggregates, the type and quality of the cement is the critical factor; most ASTM Type I and II—standard or high early strength—or masonry cements will work favorably. However, in case of doubt or when cement is not fresh, a simple test can be made. A stiff paste made up of a handful of suitable cement and undiluted Sikacrete should set within two minutes and become hard after six minutes. Also, considerable heat will be generated during the setting.

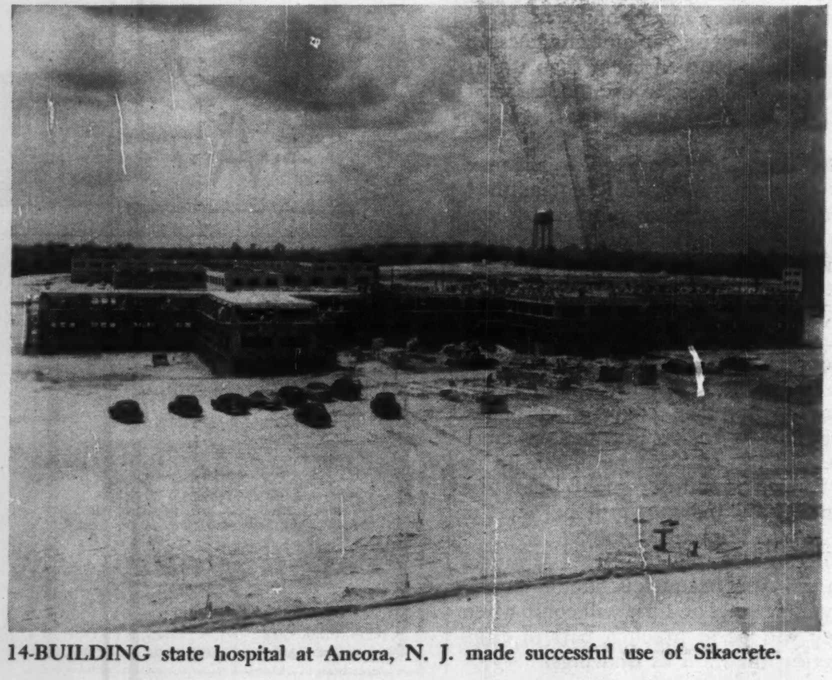
For general use, about 1½ gal of Sikacrete is added per cu yd of concrete. This proportion is usually satisfactory for temperatures falling to 32 F. Two gallons are added for temperatures down to 28 F and three gallons to 25 F. The required quantity of additive is emptied into the mixer after part of the gaging water has been added. The remaining gaging water is then added, keeping water content as low as possible.

For use in mortar mixes, one quart per bag of portland cement or one pint per bag of masonry cement is usually adequate for temperatures down to 32 F. Two quarts should be added for temperatures to 25 F and four quarts to 20 F.

During cold weather, the mixing water should be heated so that the concrete or mortar has a temperature between 60 F and 80 F. In all cases the temperature of the concrete or masonry in place should not be permitted to drop below freezing before the cement has hardened. Sikacrete is used only to accelerate set and hardening so that the period necessary for protection from freezing is shortened. It should not be considered as an anti-freeze.

Sikacrete was used successfully in the construction of the 14-building, $21-million state hospital at Ancora, N. J. According to Elwood Powers, consulting engineer, use of Sikacrete

(*Continued on page 46*)



14-BUILDING state hospital at Ancora, N. J. made successful use of Sikacrete.

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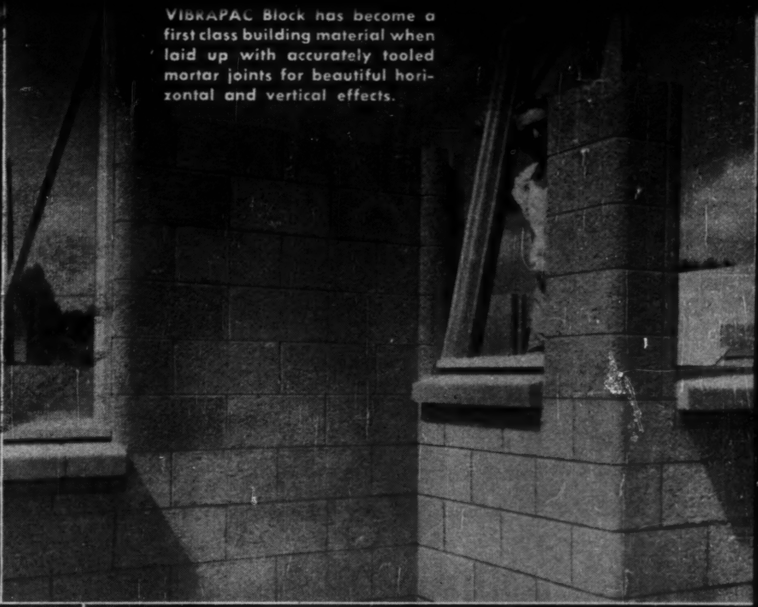

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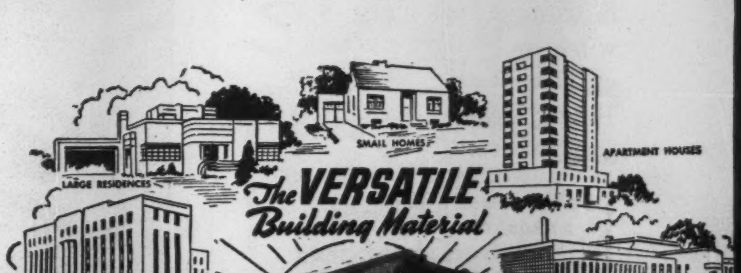
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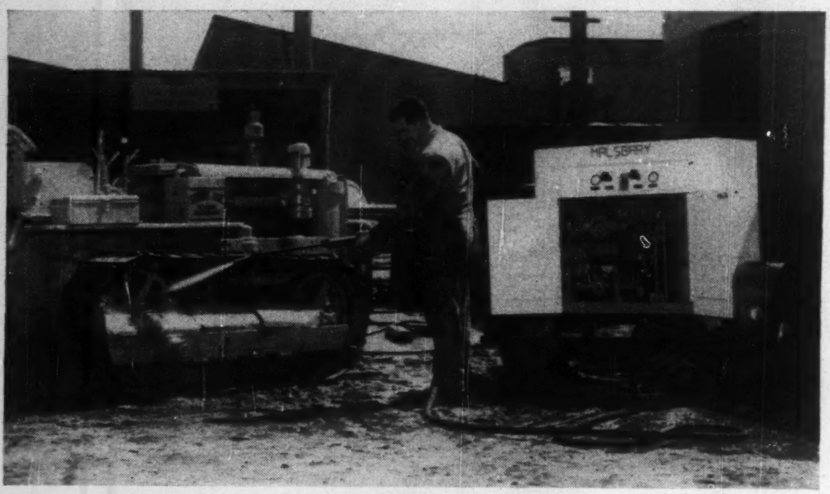
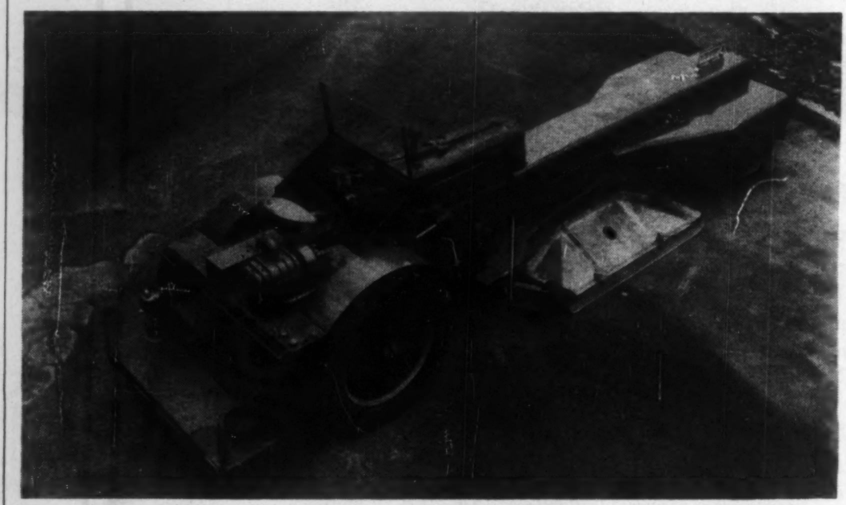
in cold weather and a retardant in warm weather provided a uniform slump, setting time and water-cement ratio throughout winter and summer construction. The Sikacrete also provided a denser, harder concrete that retarded moisture penetration. This last quality was quite important in placing the concrete tunnels that connect most of the buildings. SIKA CHEMICAL CORP., 35 GREGORY AVE., PASSAIC, N. J.



Steam Cleaner Offers Variable Sprays

Faster steam cleaning on both the toughest and ordinary cleaning work is claimed for an improved version of a high pressure combination cleaner.

This improved model produces pressures up to 300 psi—20% greater cleaning impact than its predecessor—and delivers 20 to 33⅓% more solution through its larger ¾-in. coils. Because of this increased cleaning impact, the makers claim it will clean at least twice as fast as any steam vapor



Heater-planer eliminates hand labor

Designed to condition bituminous roads, streets and airport runways, a new heater-planer is reported to eliminate high-cost hand labor. In one operation the unit planes a path as wide as 81 in., and from a skin cut to a depth of 1 in., while moving at speeds of 8 in. to 88 ft per min. Travel speed is 20 mph. The engine, an International 4-cyl, maintains a constant speed of 1,200 rpm when planing. The blade a surface heater are hydraulically operated. Wheel base is 20 ft, overall length is 28 ft 5 in. Overall width is 82 in. Littleford Bros., Inc., Cincinnati, Ohio.

cleaner and also save water, fuel and soap.

The new Model 250 uses a pump for pressure instead of steam. This feature enables the user to get 300 pounds pressure without even lighting the burner.

It is also said to make possible the choice of high pressure steam, maintained at 325 F, with gallonages to 240 per hour and up to 300 psi without excessive fog; high pressure cold water to 350 gph at 300 psi; high pressure hot water to 360 gph at 300 psi and up to 212 F at the cleaning nozzle; low pressure wet steam at 15 boiler hp or low pressure warm water to 360 gph with temperature thermostatically controlled. Two valves on the control panel enable the operator to shift instantly to any of the five cleaning actions.

Smallest fuel jet is ⅛ in. to permit burning of any fuel from kerosene to heavy diesel oil without clogging. Further, the burner is so constructed that the flame does not hit the coils and thus eliminates undesirable odors and eyeburning.

Oil- or gas-fired units are optional. Gas-fired units are stationary; oil-fired units may be had in stationary, caster-mounted or trailer-mounted models. MALSBARY MFG. CO., 845 92ND AVE., OAKLAND, CALIF.

Tractor-shovel gets bigger bucket and increased speed

Increased horsepower and faster travel speeds are among several improvements made on the Traxcavator No. 6 Shovel. The engine in the new No. 6 now delivers 100 hp at the flywheel.

In addition to an increased bucket capacity from 2 to 2¼ cu yds, the new shovels have a two-position feature that reportedly allows maximum use of this greater bucket capacity under normal conditions and obtaining of maximum scouring action and dumping action when handling sticky, hard-to-dump materials.

The shovel travels at almost 30% higher speeds with increases from 1.4 mph to 1.9 mph in first gear, from 5.8 to 7.4 mph in fifth gear, and with corresponding increases in other gears.

A new hydraulic pump increase the pressure in the hydraulic system to 1450 psi. This operating pressure is said to provide greater lifting power for faster bucket action. In addition, the hydraulic system in the new unit will be equipped with a full flow filter. CATERPILLAR TRACTOR CO., PEORIA, ILL.

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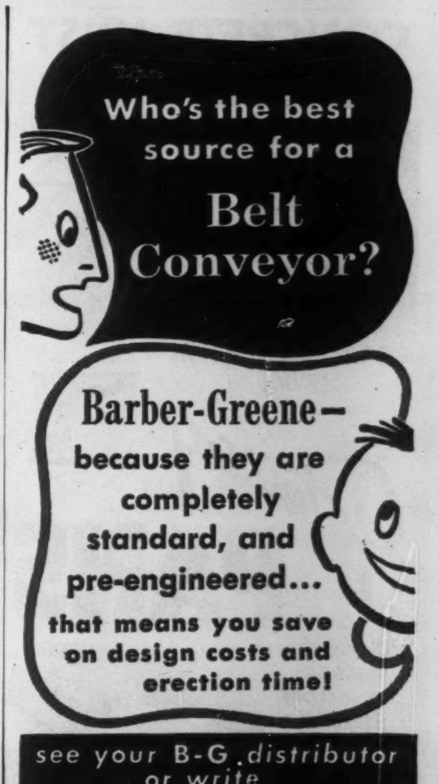


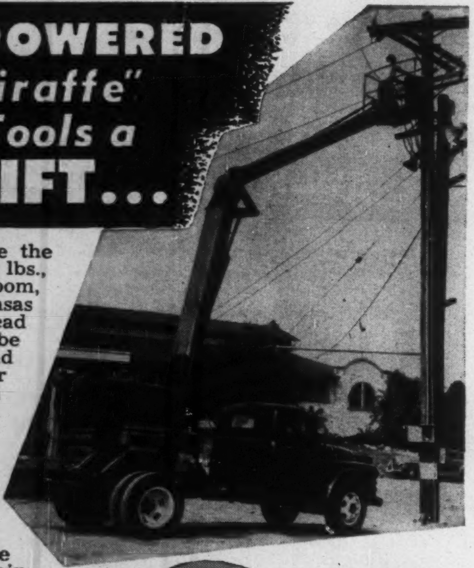
Who's the best source for a Belt Conveyor?

Barber-Greene— because they are completely standard, and pre-engineered... that means you save on design costs and erection time!

see your B-G distributor or write

Barber-Greene
AURORA, ILLINOIS, U.S.A.

WISCONSIN-POWERED
New Pitman "Giraffe" Gives Men and Tools a Fast, **HIGH LIFT...**



With a reach up to 40 ft. above the ground and a lift capacity of 1500 lbs., this unique, folding type aerial boom, made by Pitman Mfg. Co., Kansas City, Mo., speeds up many overhead jobs in construction service. Can be used for hoisting men, tools and materials for roofing and similar work, drilling in quarries and construction jobs, working on power lines, setting light utility poles, placing transformers and many other operations.
A 2-cylinder Model TFD Wisconsin Heavy-Duty Air-Cooled engine supplies dependable, quick-starting, all-weather power which can also be used to drive compressor or generator . . . again demonstrating the great versatility and adaptability of Wisconsin Engines . . . providing always ready-to-go Lugging Power to Fit the Job and the Machine . . . 4-cycle single cylinder, 2- and 4-cylinder models 3 to 36 hp.
You can't do better than specify "Wisconsin Power" for *your* equipment. Write for Bulletin S-164.

Power TO FIT THE JOB
Power TO FIT THE MACHINE

MOST H.P. HOURS
WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

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RENTAL and ERECTION SERVICE

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Stocked in . . .
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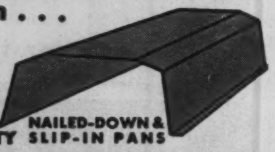

NAILED-DOWN & SLIP-IN PANS
Ask for Catalog No. 3100

GATEWAY ERECTORS, INC.
3233 W. Grand Ave., Chicago 51, Illinois

FLOODLIGHT PROJECTOR
For Night Lighting
Kerosene or Propane Gas

- Burns 40 hours on 6 pints of kerosene or 47 hours on 20 lbs. of propane gas. Wind and rain proof. 26 inches high, weighs 38 pounds. White light of 5,000 reflected candle power with kerosene or propane. Also available on 5 to 8-ft tripod with turntable top. Also supply smaller lamp, 2,000 C.P.
- Used by contractors, municipalities, industrial plants, railroads, park districts.

WRITE OR WIRE FOR DETAILS
WM. W. LEE and SON
20 EAST JACKSON BLVD.
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Cable: Leelights

OBITUARIES

Theodore Matson, Traffic Authority, Dies in New Haven

Theodore Malvin Matson, director of the Bureau of Highway Traffic of Yale University, and internationally known authority in the field of highway traffic, died December 17, 1954 in New Haven, Conn., at the age of fifty-one.

Born in Denver, Colorado, Mr. Matson received a Bachelor's Degree in Chemical Engineering at Stanford University in 1923 and a Master's Degree in Electrical Engineering in 1925.

In 1926 he entered the new field of traffic engineering serving the San Francisco Traffic Survey Commission as resident engineer for three years. He then became traffic engineer of the Traffic Commission of Kansas City, Missouri. He was traffic engineer of the City of Philadelphia from 1933 to 1935.

He then joined the faculty of Harvard University with the Bureau for Street Traffic Research in 1935. When that Bureau moved to Yale in 1938, Mr. Matson became a member of the Yale University faculty. He was appointed director of the Bureau of Highway Traffic in 1943.

Mr. Matson was a pioneer in the development and establishment of the profession of traffic engineering. He was one of the founders of the Institute of Traffic Engineers and was vice president of that body at the time of his death.

John C. DeBolt, river engineer with 30 years service in the Corps of Engineers St. Louis office, died Nov. 28. In his most recent Corps post as construction management engineer he served as assistant chief of operations in the construction division and as head of the river regulating works maintenance section.

William F. Miller, general manager of Lorain Slag Co., Lorain, Ohio, was killed Nov. 30 while trying to rescue a worker from a sinking pile of slag. He previously was employed by Holmes Construction Co., Wooster, Ohio.

Frank R. Goodman, 85, retired contractor of Toledo, Ohio, died Dec. 9.

Anthony Spadaro, Sr., 56, senior superintendent of building construction for the New York State Department of Public Work, died in Albany, N. Y., Dec. 17.

MEN AND JOBS

ERNEST O. LARSON, right, reviews plans for Colorado Storage Project which may soon make him . . .

Head of Largest Reclamation Program

Scheduled to come before Congress again this year is the controversial $1.4-billion basin project for the Upper Colorado River. Key projects in the program—endorsed last year by President Eisenhower—are the $421-million Glen Canyon Dam in Arizona and the $176-million Echo Park Dam on Green River near the Colorado-Utah state line (ENR, Mar. 25, p. 21).

If these are approved, Ernest O. Larson of Salt Lake City will head up two of the largest reclamation projects in the nation's history. As head of the Bureau of Reclamation's Region IV, Larson has been one of the principal architects of the mammoth program.

Main purpose of the program—developed under the Colorado River Compact of 1922—is to regulate the Colorado River and its tributaries, and to insure flow of water to lower basin states during dry periods. Coupled with it are $304 million of irrigation projects and a $21-million recreational project in Dinosaur National Monument.

"Olie" Larson is one of the "local people." He was born on a farm in the little town of Santaquin, Utah, in 1894—son of a Swedish immigrant miner and farmer. For awhile he followed in his father's footsteps—farming, doing local construction work, and mucking at the old Union Chief mine near his home.

A degree in irrigation engineering from Utah's Agricultural College in 1918 marked the beginning of his career. He's been in government service continuously since then—except for a year getting a master's degree, and two years with a private engineering firm in Logan, Utah.

• Still at it—Characteristic of the long-range aspects of his work is the fact that some of the problems of his earliest jobs are still with him. He started wrestling with the Bear River as a hydrographer in 1918—and 36 years later he's still at it as chairman of the Bear River Compact Commission mediating differences among Utah, Idaho and Wyoming on water use. Some of his present work he pioneered a little later, while working with the U. S. Department of Agriculture. He was then engaged in irrigation and drainage investigations in the Boise and Payette River valleys of Idaho and eastern Oregon.

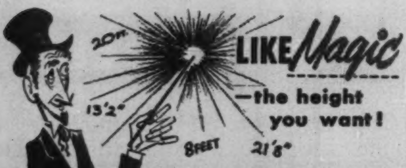
Larson switched to the Bureau of Reclamation in 1923 and his responsibilities grew with increasing rapidity. One after another, major projects fell into his lap:

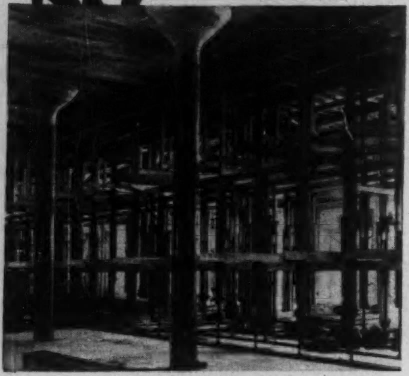
- State-wide investigations of Salt Lake Basin.
- Ram-rod construction work on the Ephraim and Spring City, Utah, diversions on the Sanpete project.
- Supervision of Midview Dam and Canal systems of Moon Lake project in Duchesne County's Uintah Basin, Utah.
- Organization of the $3-million Echo Reservoir project on the Weber River.
- Construction and engineering supervision for the Provo River project—embracing Deer Creek Reservoir, Duchesne Tunnel, Salt Lake Aqueduct, Provo River Reservoir Canal; and . . .

• Job for today—Operational direction of Region IV of the Bureau of Reclamation.

(*Continued on page* 50)

ON THE JOB, Larson (center) keeps a finger on construction progress.





the New

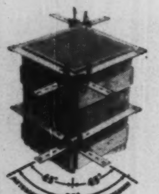
ROOSHOR

EXTENSION TYPE

For every shoring job . . . regardless of height . . . the new ROOSHOR, Extension Type, provides the fast, efficient and economical method. This new ROOSHOR may be used as a flat-head shore, or, by merely inserting any length S4S 4 x 4, as an extension shore or, as a male-head shore . . . one type shore does all of this. Wooden upper members make it easy to nail bracing when needed. Available in two sizes giving adjustments from 6' to 10'-6" or 8' to 14.'

STANDARD ROOSHOR

Instantly adjustable to accurate height—without pins or screws to cause needless delays. Three sizes, giving adjustment from 8' to 14', 7' to 13' and 5' to 9'.



ROOS COLUMN CLAMPS

The job-proven answer to column forming accuracy . . . two identical hinged units . . . no wrong way to put them on . . . no loose parts. Rooshors and Roos Column Clamps are available for rental with purchase option from warehouse stocks in principal cities. Write for Bulletin 455.

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P. O. Box 892, Indianapolis 6, Indiana.
Please rush additional information on Rooshors and Roos Column Clamps without any obligation.
Name________
Company________
Address________
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One of Larson's pet projects, developed during his tenure as regional head, is the $70-million Weber Basin irrigation program scheduled for completion in 1957 (ENR, Apr. 15, p. 27). The largest reclamation project ever authorized for Utah, it will irrigate more than 50,000 arid acres, supplement the irrigation of 24,000 more, and supply water for municipal and industrial uses.

Despite his influence on governmental development of water resources, Larson firmly believes "the government shouldn't do anything the people can do themselves." In keeping with this philosophy, he is credited with turning more projects over to water users faster than any other reclamation executive. Power wise, he takes the stand that the distribution of electric power from publicly built dams should be handled by private utilities. To him, the federal government is not a "super state."

Over the years, Olie Larson has learned the full significance of his college motto—"Labor is Life." In addition to his reclamation job, he serves as chairman of the Pacific Southwest Interior Field Committee, representing seven government agencies of the Interior Department in the West.

Next year, he is scheduled to head the Federal Inter-Agency Technical Committee—which represents the Corps of Engineers and the Departments of Commerce, Interior, and Health, Welfare and Education.

At the age of 60, Larson occasionally pauses to take stock of the job he fills. The way we work, he says, is this: "The Bureau of Reclamation can develop projects and explain issues to Congress. It is up to the people to promote them and decide whether they are worthwhile."

Civil Engineer Appointed New Orleans Port Director

Walter J. Amoss has been named to the newly created post of port director of New Orleans. He resigned last week as president of Valentine Pulp and Paper Co., Inc., and started his new duties Jan. 1.

As the port's top executive officer, Amoss will have charge of the over-all management and direction of port affairs.

A civil engineering graduate of Tulane University, he started his career as an engineer on dredging and construction projects, here and in South America, for United Dredging Co., Orleans Dredging Co., and Hampton Reynolds. From 1931 to 1952, he was associated with New Orleans Public Service, Inc., starting as an engineer and later becoming vice president.

Amoss has been with the Valentine company since 1952 and holds executive posts in several affiliated companies.

Raymond Names Bailey As New Chief Engineer

Raymond Concrete Pile Company, New York, has appointed G. William Bailey as chief engineer. He succeeds Warren N. Riker, who is now district manager of the Boston office.

Bailey joined the company as a civil engineer in 1940, following his graduation from Thayer School of Engineering at Dartmouth College. He served two years as project engineer on high priority construction at Curacao, Netherlands West Indies for Shell Oil Co., and was later appointed chief estimator for the Raymond company.

Men and Jobs Briefs . . .

• **Associations**—Ohio Contractors' Assn. elects **Harry B. Fenton,** Ashland, as president . . . **James Julian,** Elsemere, is new president of the Delaware chapter of the AGC. . . . **Ernest L. Clements** takes over as president of the AGC in northern California . . . **Edwin M. Rodenbaugh** is re-elected president of the Weatherstrip Research Institute.

• **Business**—Kansas City Bridge Co. appoints **Joseph J. Boyd** as chief engineer . . . **William J. Sparling** joins the board of directors of Chain Belt Co. . . . **H. E. Barrentine, Sr.,** becomes construction management engineer of Baltimore Contractors, Inc.

• **Education**—In April, **Edward D. Harrison** will take over as dean of the college of engineering at University of Toledo . . . **Philip H. Grove,** vice president of Grove, Shepherd, Wilson and Kruge, New York, becomes vice chairman of Rensselaer Polytechnic Institute's Associate Development Council for Architecture . . . **Granville M. Read,** chief engineer, E. I. duPont de Nemours and Co., is named trustee of the University of Delaware.

• **Resignations**—After 39 years as president, **Col. Edward A. Deeds,** from Miami Conservancy District, Dayton, Ohio . . . **Robert T. Gupton,** as chief highway engineer of the Florida State Road Department.

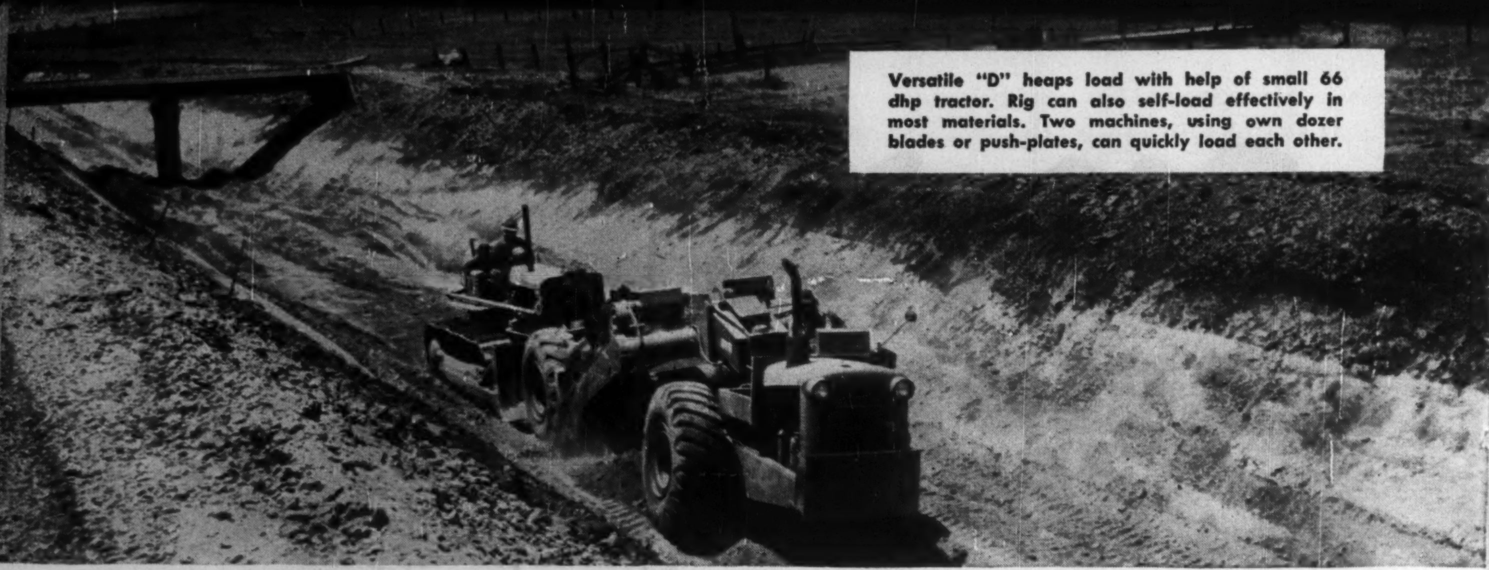
BIG JOBS NEED THE MARION 111-M

MARION POWER SHOVEL CO.
Marion, Ohio, U. S. A.
from 1 cu. yd. to 60 cu. yds.

OSGOOD-GENERAL, a subsidiary, manufactures excavators in sizes from ½ to 2½ cubic yards, truck cranes from 15 to 25 tons, Mobilcranes from 25 to 45 tons and log loaders.

MARION 111-M, a 160-ton crane (rated capacity at 12') is shown lifting a 42-ton control gate which can be handled at a 27' radius by this machine. Gate is for power tunnel at Palisades Dam.

MARION 111-M, a 5 cu. yd. dragline, is excavating coffer dam to divert Snake River into diversion tunnel on Palisades Dam in Idaho.



Versatile "D" heaps load with help of small 66 dhp tractor. Rig can also self-load effectively in most materials. Two machines, using own dozer blades or push-plates, can quickly load each other.

Work in close quarters
Make sharp turns
Climb steep banks

After spreading on levee, units travel down bank to canal. Sharp turns are easily negotiated with "D's" ability to turn around non-stop in space only 26′ wide.

2 Tournapulls, owned by Jordan, Ruff & Spurlock of Hayward, California, relocate Livermore Canal in Alameda County. "Can't beat these machines on this type of work," say the owners.

Owner records, covering the first 20 working days, or ⅔ of the 60,000 yard, 1½ mile state-sponsored excavation project, show excellent production for their two side-boarded 7-yard D Tournapulls.

Average 150 yds. hourly on 1000′ hauls

On average 2000′ cycles — hauling along the canal bottom, up a steep bank, and spreading on top of a levee — each Tournapull delivered a load every 4½ to 5½ minutes. Owners estimate loads in the dry clay material ran around 6½ to 7 pay yards each. Production per machine on the 1000′ hauls averaged 10 to 12 loads per 55-minute hour...combined hourly output for the 2 machines varied from 130 to 168 pay yards. Most of the time during the 200 working hours studied, when hauls were somewhat shorter than 1000′, owners figure combined hourly output was almost exactly 200 pay yards.

"You just can't beat Tournapulls for this type of work," is the conclusion of Jordan, Ruff and Spurlock. "The 'D's' work fast in close quarters, make sharp turns, produce well, and at low cost."

Drive job-to-job at speeds to 28 mph

Another advantage of these 140 hp machines is their job-to-job mobility. A typical 50-mile trip through city and country traffic takes about 2 hours. Top speed is 28 mph. No trailers are needed, no loading, no blocking . . . "D's" go everywhere under their own power.

You, too, can save time and make more money with D Tournapull's high-speed, rubber-tired mobility and production ability. For proof, see your LeTourneau-Westinghouse Distributor. Ask for a demonstration . . . find out first-hand how the versatile "D" can make money on one-man, one-machine dirtmoving, or as a production tool in pusher fleets.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-721-D-b

A Subsidiary of
Westinghouse

LeTourneau-Westinghouse Company
PEORIA ILLINOIS

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
February Materials, and Labor Prices, will appear in February 10, 1955 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.: per block		CONCRETE Ready Mixed 1:2:4: over.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 c.y., del.
Atlanta	$3.87	$3.56	$3.40	$2.075	$2.075	$1.83	$2.20	$2.20	$1.99	$1.99	$0.21	$0.21	$12.06
Baltimore	4.06	3.75	3.53	2.60‡a	2.60‡a	2.00‡a	2.75‡a	2.80‡a	2.65‡a	2.60‡a	.17	.17a	12.15
Birmingham	3.62	2.75e	....	2.53n	2.53n	2.08n	2.75	2.75	1.35	1.45	.165	.165	11.00
Boston	4.37	4.11	3.96	2.50a	2.50a	2.50a	1.50a	1.60a	.....	.....	.215	.245a	12.50h
Chicago	3.63	3.32	3.35	3.25‡b	3.25‡b	3.65‡b	3.25‡b	3.25‡b	2.25‡	2.25‡	.23	.235	12.50^{r}
Cincinnati	3.85	3.55	3.63	2.19‡c	2.24‡c	2.24‡c	2.54‡c	2.54‡c	.....	.....	.18	.225a	11.45^{r}
Cleveland	N. A. in C. L.	3.34e	....	2.05f	1.85f	1.65	4.10‡a	4.10‡a	3.35‡	3.15‡	......	.22	14.40d
Dallas	3.15	2.85	2.90	2.18	2.28	1.84	2.22	2.38	.....	.....	.11e	.2675	9.40
Denver	4.24	3.94	4.24	1.85	2.00	1.20	....	....	.....	.....	.23	.255a	10.50
Detroit	3.72	3.17	3.50	4.50‡b	4.50‡b	4.00‡b	3.75‡	3.75‡	4.25‡	4.25‡	.21	.21a	12.70
Kansas City	4.00	3.80	3.48	1.85‡	1.85‡	1.85‡a	2.00‡a	2.00‡a	.....	.....	.22a	.24c	12.75b^{t}
Los Angeles	4.72a	4.26a	5.20	2.21a	2.41a	2.21a	2.16a	2.26a	.....	.....	.135fm	.245m	11.88lh
Minneapolis	4.10	3.79	3.71	2.70‡ag	2.70‡ag	1.60‡ag	3.25‡ag	3.25‡ag	.....	.....	.19i	......	13.25^{hr}
Montreal	3.16ac	2.96ac	....	3.00^{o}	3.00^{o}	2.25	1.65ij	1.90ij	.....	.....	.19	.19a	10.55^{ah}
New Orleans	3.50	3.20	3.48	2.44	2.44	2.00	....	....	1.45	1.65	.275	......	12.90
New York	4.16	3.85	3.53	2.85bk	2.85bk	1.90bk	2.70bl	2.70bl	.....	.....	......	......	14.65an
Philadelphia	3.73/4.12‡	3.42/3.79‡	3.58/3.63‡	2.75‡^{o}p	2.75‡^{o}p	2.15‡^{op}	2.30‡	2.40‡	2.00	1.90	.22/.26	......	13.20^{do}
Pittsburgh	3.62	3.34	3.62	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.28	13.00^{t}
St. Louis	3.55/3.78b	3.25/3.51b	3.40/3.57	3.10am	2.90am	2.30/2.90am	1.60j	1.70j	1.50	1.50	.22	.28ci	12.25^{u}
San Francisco	3.67	3.27	....	2.07	2.07	2.17	2.22	2.22	.....	.....	......	.28cl	12.15e
Seattle	4.80a	3.55a	5.95h	3.50‡bm	3.50‡bm	3.50‡bm	4.00‡bm	4.00‡bm	.....	.....	.225^{i}	.315^{i}	12.30^{j}

‡ Delivered. * Prices incl. dealers discount except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers discount not incl. *e* Truckload lots, destination price. *h* LCL.
SAND GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars. *o* 1–3 mi zone. *p* Add 10¢ for ea. add'l mi zone.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete *e* 5¼ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash *j* Less 1% for cash. *l* F.o.b. plant San Rafael. *m* F.o.b. yard
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cy. brackets. *d* 1–3 mi. zone. *e* 2,000 lb comp. *f* 2500 lb. comp. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause. *o* Add 15¢ for ea. add'l 3-mi zone. *r* Includes 50¢ heating charge *t* Includes 25¢ heating charge *u* Includes 35¢ heating charge

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.90†	Buffington, Ind.	$2.85†	Steelton, Minn.	$2.95†	Muskegon, Mich.	$3.00†	Toledo, O.	$2.90†
Clinchfield, Ga.	2.90†	Independence, Kan.	2.80†	Leeds, Ala.	2.75†	Saginaw, Mich.	2.90†	Milwaukee, Wis.	3.05†
Kingsport, Tenn.	2.90†	Hannibal, Mo.	2.85†	Duluth, Minn.	2.95†	Wyandotte, Mich.	2.90†	Green Bay, Wis.	3.05†
West Des Moines, Iowa	2.95†	Northampton, Pa.	2.90†	Hudson, N. Y.	2.75†	Buffalo, N. Y.	3.00†	Ironton, O.	2.90†
Nazareth, Pa.	2.90†	Universal, Pa.	2.95†	Alpena, Mich.	2.80†	Oswego, N. Y.	3.15†	Montreal City	2.66
Bath, Pa.	2.90†	Waco, Tex. (+ 10¢ tax)	2.60†	Detroit, Mich.	2.90†	Cleveland, O.	2.95†	W. Winfield, Pa.	3.00†

† *Prices to hold for first quarter of* 1955.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT MC Per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$82.00	$41.00	$2.25	$26.00	$33.25	$0.215	$0.455	$0.095w	$0.185w	$0.105	$0.115	$0.225
Baltimore	150.00‡	75.00‡	.....	21.00i	.....	.085i	0.175i	.09iw^{E}	.18iw^{E}	.09i	.095i	0.185i
Birmingham	.....	49.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00a	23.00a	22.00av	22.00av	.09^{F}	.....	.09a	.10a^{G}	.22a^{G}
Chicago	155.00‡	85.00‡	3.45/3.55‡j	19.85b	29.85b	18.85bv	28.85bv	.094bw^{H}	.1740bw^{H}	.0725b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	70.00d	5.03g	23.00	.....	23.00^{A}	.....	.1025^{A}w^{F}	.....	.....	.1025^{AG}	.18^{AG}
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	28.91	50.44	.098	.1087	.1960
Denver	.....	50.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	98.00	.....	27.21	.....	27.21v	.....	.1188w^{I}	.....	.0792	.....	.211
Kansas City	e	e	e	15.00cl	.....	15.00•	.....	.065•w^{J}	.....	.055c	0.11	.....
Los Angeles	e	.....	e	16.00dmx	.....	16.00dvx	.....	18.00dx^{K}	.....	17.00dv	.0825j	.1725j
Minneapolis	.....	.....	2.97h	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montreal	.....	e	e	27.00n	39.60n	.135n	.198n	16.50nu	20.90nu	.132n	.197ns	.239ns
New Orleans	.....	.....	.....	17.50e	....o	17.50ev	....o	.085ew	....o	.0825^{B}	.0825^{BL}	.....
New York	.....	.....	2.75f	23.89q^{CD}	44.32q^{D}	22.89vt^{CD}	43.57vt^{D}	.1023w^{CDF}	.1889w^{DF}	.....	.1023^{CD}	.1918^{D}
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.09u^{F}	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00^{E}	40.00^{E}	.098	.11	.224
St. Louis	.....	.....	.....	18.55f	.....	.1713	.....	.0865w^{M}	.....	0.155	.10	.....
San Francisco	.....	55.00^{c}	.....	17.50g	33.00gp	17.50gkv	33.00gkv	20.00g^{N}	37.50g^{N}	18.75v	.085y	.....
Seattle	.....	.....	.....	17.50h	38.00h	17.25hv	.....	24.50^{K}	.....	19.75hv	.085h	.095^{hv}

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *c* 2⅝ x 8¼ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6# treat. *g* 3" , *h* 2" int., 8# treat. *i* 3 x 3⅝ x 8½. *j* 2½", 6lb. tr.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* F.o.b. refinery, Baltimore. *j* F.o.b. refinery, Inglewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40/80 penetr. *n* Tax incl. *o* Drums not avail. Shipped in steel bbl. *q* 40/85 penetr. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 85/200 penetr. *u* Per 100 gal. • Per ton. *w* Per gal. *x* Also tank trucks *y* F.o.b. Oakland. ^{A} F.o.b. refinery, Cleveland. ^{B} F.o.b. Destrehan, La. ^{C} Bulk. ^{D} Prices based on transporting to Manhattan via truck. ^{E} RC. ^{F} Also RC. ^{G} Also MS, SS. ^{H} RC^{O} -5 incl. ^{I} MC 4. ^{J} MC, RC .0675. ^{K} MC 3, 4 & 5. ^{L} MS. ^{M} MC 1-5, RC 1-5, .089. ^{N} MC 3.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$4.25	$4.225	$4.30	$9.25	....	$89.00	$107.00	Not	$5.425	$7.30	$5.275	....
Chicago Area	4.25	4.225	4.30	9.25	$5.075	89.00	107.00	avail-	5.425	7.30	5.275	....
Pittsburgh Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00	able	5.425	7.30	5.275	$11.50
Buffalo Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00	....	5.425	7.30	5.275	11.50
Cleveland	....	....	4.30	9.25	5.075	......	......	....	....	....	....	11.50
Youngstown Area	....	....	4.30	....	....	......	......	....	....	7.30	....	....
Geneva	4.25	4.225	....	....	....	......	......	....	....	....	....	....
Los Angeles	....	....	....	....	5.075	......	......	....	....	7.30	....	....
Pueblo	4.30	4.70	4.75	....	....	......	95.00	....	5.425	7.30	5.275	11.50

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	Rail steel	EXPANDED METAL LATHk Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.
Atlanta	$7.31	$7.11s	$7.11s	$38.00‡	$42.00‡
Baltimore	7.02	7.06j	....	42.00	45.00
Birmingham	6.35	6.15t	6.15t	51.00p	57.00p
Boston	7.59a	7.37	7.37	42.00	46.00
Chicago	6.69	5.78gu	5.78gu	46.00‡	56.00‡
Cincinnati	7.06ak	7.06rv	....	39.00mn	43.00mn
Cleveland	7.02	5.76c	....	39.00‡	43.00‡
Dallas	9.05	7.25	7.25	49.00	52.00
Denver	8.15	7.20c	....	48.00n	63.00mn
Detroit	7.16	6.93dw	....	50.50	60.50
Kansas City	7.36a	7.57	....	42.40	47.50
Los Angeles	7.55fd	7.05	....	52.00	58.00
Minneapolis	7.15d	7.68b	7.68b	37.00	41.00
Montreal	7.50–8.00iC/8.50–9.20A	6.65i	6.65i	46.00h	51.00h
New Orleans	....	6.20akz	....	66.00	60.00
New York	7.48	6.85yaa	6.85yaa	42.00no	48.00no
Philadelphia	6.42	6.67	....	38.00‡	42.00‡
Pittsburgh	6.55	6.55z	6.55	37.60	39.60
St. Louis	7.09a	6.30c	6.30c	55.00l	56.00l
San Francisco	7.50	6.85j	....	41.50	47.50
Seattle	5.00e	6.55cj	....	51.00nr	57.00nr

Quantity extras, per cwt: under 100#, +$4; 100–399#, +$2; 400–999#, +85¢; 1000–1999#, +20¢; 2000–9999#, base price; 10,000–19,999#, −20¢; 20,000–39,999#, −40¢; 40,000# and up, −50¢

EXTRAS, per cwt—*Quantity: less than 700#, +50¢; 700–1499#, +25¢; 1500–7999#, +10¢
*Size†: #2 +$2.20; #3 +$1.10; #4 +80¢; #5 +62.5¢; #6, #7 +45¢; #8, #9, #10 +30¢
*Bending: heavy, +80¢; light, +$2 (except in New York City and surrounding metropolitan area where bending must be done on the job)
*Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–500 tons, +50¢ but not over $4500; 20–200 tons, +60¢ but not over $2000; 5–20 tons, +70¢ but not over $240; under 5 tons, +85¢ but not over $70
*Design only: +60¢

WELDED FABRIC REINFORCING
Per 100 sq. ft., carload lots fob mill

4 × 16 in., No. 5 & 10 wires—Joliet, Ill., Donora, Pa., Monessen, Pa.....$3.18
4 × 12 in., No. 8 & 12 wires—Joliet, Ill., Donora, Pa., Monessen, Pa.....$2.08
6 × 6 in., No. 6 & 6 wires—Joliet, Ill., Donora, Pa., Monessen, Pa.....$3.33

*‡ Delivered *a 2000–9999# *b 10,000–15,999#, fob city *c 20 tons or over *d 10,000–19,999# *e fob plant *f incl. delivering in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p del. of 500 sq. yd. or more *q 4# per sq. yd. *r 2% off for cash *s add 2.5¢ switch *t add 5¢ switch, 15¢ del. *u add 6.25¢ switch *v incl 15¢ del. *w add 20¢ del. *x add 5¢ switch *y add 30¢ del. *z add 10¢ del. *aa Prices beginning Aug. 1 based on Morrisville, Pa.; previously based on Sparrow Pt., Md. Decrease in freight costs due to switch in mill base offset mill price rise July '54. *A American made. *C Canadian made. † Number system replaces inch system of classifying bar sizes. New system is based on number of eighth inches in diameter of bar.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Pr Cl. 150	12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	$4.82	$12.925	$248.00	$356.00	$0.90m	$3.40m
Baltimore	121.50	1.45	2.42	.546	1.053	4.275s	11.3775	178.20	274.80	.95	2.60
Birmingham	103.00	1.45	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25m	2.75m
Boston	122.00	1.47	2.20	.553qrt	1.0665qrt	4.365qrt	12.00qrt	187.80r	289.20r	1.62mg	3.95mg
Chicago	107.00	1.45	2.20	.70m	1.35m	5.62m	13.50m	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	1.47	2.29	.581t	1.120t	4.64t	12.20t	225.00	350.00	.80m	2.95m
Cleveland	108.00	1.47	2.29	.49s	.945s	3.96s	10.66s	158.00m	245.65m	.85m	3.25m
Dallas	112.00	1.47	2.54	.439	.799	4.00b	9.17b	......	......	.49	1.60
Denver	115.00	1.53	2.54	.45n	.78n	3.48n	....	......	......	.74m	2.50m
Detroit	108.00	1.47	2.29	.75	1.45	5.75	15.50	230.00m	350.00m	.86	3.47
Kansas City	113.00	1.47	2.29	.53	.945	3.87	10.60	250.00	480.00	.80	3.25g
Los Angeles	129.65x	1.53	2.20	.67l	1.46l	5.97l	14.89l	228.20l	348.90l	.95	2.75f
Minneapolisw	112.00	1.49	2.42	.75mo	1.36mo	5.60mo	....	......	......	1.38h	4.05h
Montreal	110.00	....	....	1.07u	1.73u	5.52u	8.93u	......	......	1.17h	3.11j
New Orleans	101.50	1.45	2.42	.48	.875	4.69	....	280.00p	460.00p	.65	2.29
New York	111.35	1.47	2.20	.66	1.28	5.08	13.42	......	......	1.15	3.00
Philadelphia	110.00	1.45	2.20	.65	1.25	4.95v	12.65v	300.00‡	350.00‡	1.60h	3.95h
Pittsburgh	110.00	1.47	2.20	.468m	.864m	3.86m	9.78m	152.00	244.00	1.05h	2.50h
St. Louis	112.00	1.45	2.29	.56	1.03	4.22	9.80	180.00l	380.00l	1.25il	2.70il
San Francisco	127.00	1.53	2.20	.61d	1.41d	5.78d	14.32d	235.00l	392.00l	1.05n	3.30n
Seattle	138.73	1.54	2.20	.51b	.91b	....	....	150.00c	......	.85k	2.75k

*WROUGHT STEEL PIPE
(Full standard weight)
Discount from list; see footnote

Mill	2½ & 3 in., Butt Weld† Black %	Galv. %	3½ to 6 in., Lap Weld† Black %	Galv. %
Lorain, Ohio	34.25	17.00	....	....
Aliquippa, Pa.	34.25	17.00	22.50a	10.25a
Sparrows Pt., Md.	32.25	15.00	20.50a	2.75
Benwood, W. Va.	34.25	17.00	24.25d	6.50d
Youngstown, O.	34.25	17.00	....	....
Indiana Harbor, Ind.	33.25	16.00	24.50ab	6.75a
Sharon, Pa.	34.25	17.00	....	....
Wheatland, Pa.	34.25	17.00	25.50a	7.75a
Etna, Pa.	34.25b	17.00	24.25d	10.00d
Fontana, Calif.	21.25b	4.00b	12.50ab	+5.25ab

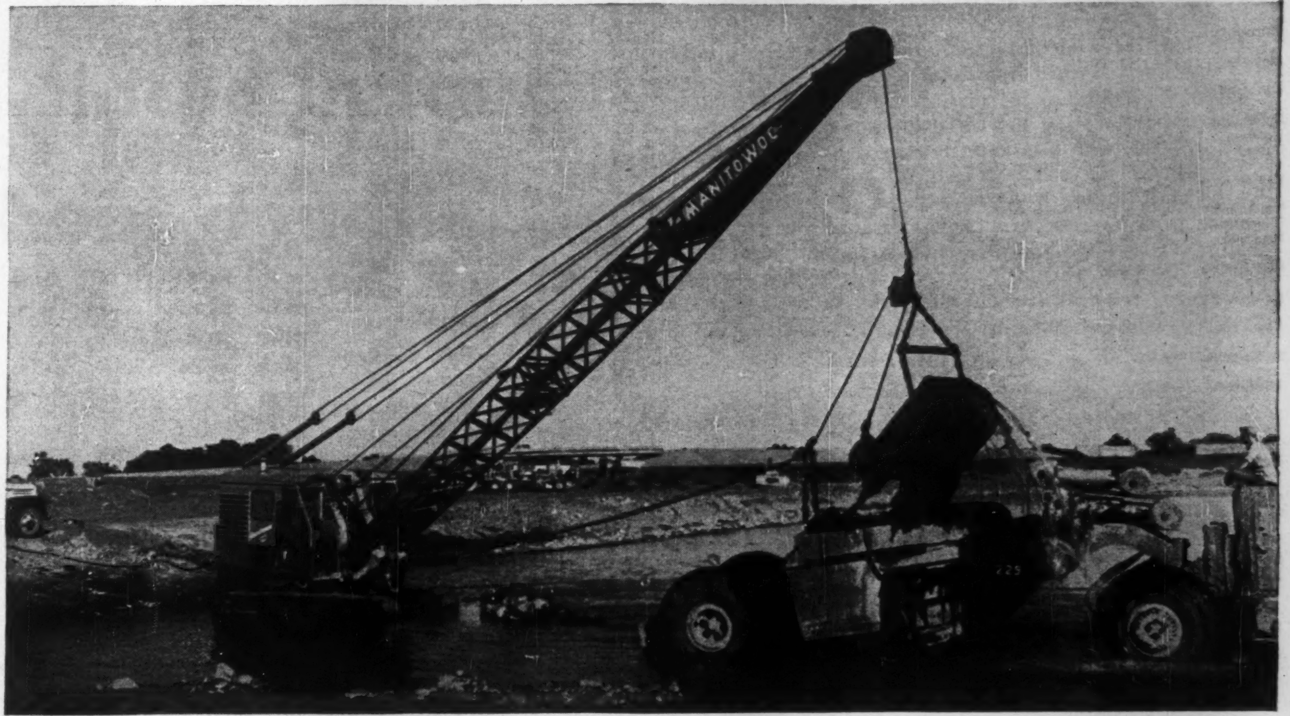
† Threaded and coupled. a 3½ to 4 in. b Continuous weld. c 5 and 6 in. d 6 in.

*‡ Delivered *a Class B & heavier. Based on existing freight rates; subjec to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b Extra strength ASTM C 200–44T *c 4-in., $90 *d SS361-A *e 30-in. *f 21 in. *g culvert pipe; reinforced, ASTM C 76–41 *h reinforced, ASTM C 75–41 *i reinforced, ASTM C 76–37 *j centrispun; no standard specs. in Canada *k 2% off for cash *l fob plant *m truck delivery *n LCL delivered, fob truck *o listed price based on LCL (no min.) *p freight allowed to destination in city *q ASTM C 13–40 *r CL fob origin, freight allowed *s 2 ft lengths *t 3 ft lengths *u CESA A 60–1941 specs. used *v standard strength *w 6 in., $1.67 per ft., Class 150, CL, fob track *x 6 in.

*WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): *Butt Weld* ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following " discounts " to get Pittsburgh mill price: *Butt Weld* — 1 in. black, + 32.75, galv. + 61.0; 1¼ in. black, + 32.75, galv. +60.50, 1½ in. black, + 29.25 galv. + 56.75; *Lap Weld* — 2½ in. to 3 in. black + 33.50 galv. + 59.5; 4½ in. to 6 in. black + 30.50 galv. + 54.75. Add freight rates plus 3% transportation tax to get destination price.

Manitowoc 2000 *dives for dollars*



here are the "2000" features:

Faster Working Cycles
Faster hoist speed—swing speed

•

Efficient—Economical
Simple design—only 13 working gears

•

Greater Capacity
(45 ft. crane boom—50,000 lbs.)

•

Easily Converted
Shovel—Dragline—Crane—Hoe

•

Less Ground Pressure
6.9 to 13.0 lbs./sq. in.

•

Long, Wide Crawlers
12'4"—14'7"—16'10"

EVEN THOUGH it's up to its "travel shaft" in water—this Manitowoc 2000 is packed with profitable action! Assigned to handle the toughest part of a $250,000 Washington State Highway Commission job for Cherf Brothers near Kennewick, Wash., this Model 2000 is slugging it out with rocks, boulders, clay, sand, gravel *and water* at the rate of 1000 yards per shift, sometimes working around the clock. Frequently this 1¼ yd. rig has to submarine its oversize bucket to a depth of 9 feet under water to get its load!

A smooth functioning torque converter reduces load shocks and boosts operating efficiency. Jaw-type steering clutches and travel gear are fully enclosed — protected from water and dirt. These are the Manitowoc features that permit this kind of wet going.

Got a tough job? Let a Manitowoc take a crack at it — take your operation out of the "red" and end up each shift in the "black".

MANITOWOC

SHOVELS
1-5 YD.

Speedcrane

CRANES
18-100 TON

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft.

(Prices in italics)

LONG LEAF Y. P. Merchantable grade up to 20 ft.

PLYWOOD Rail freight increment (See note for base price)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	Long Leaf Y. P. 2x12 Rgh	Long Leaf Y. P. 12x12 Rgh	Plywood 5/8"	Plywood 3/4"
Atlanta........†	$77.00	$80.00	$73.50	$74.00	$77.50	$81.00	$79.00	......	......	......	......	$22.32	$27.24
Baltimore......*	87.00	92.00	85.00	85.00	88.00	95.00	100.00	......	......	$160.00	$170.00	25.92	31.60
	120.00g	*120.00g*	*120.00g*	*120.00g*	*120.00g*	*120.00g*	*120.00g*	*$135.00*	*$135.00*	......	......	......	......
Birmingham....†	80.50	82.50	80.50	87.50	90.50	95.50	105.50	......	......	120.50	165.50	21.78	26.58
	105.00	*105.00*	*108.50*	*108.50*	*108.50*	*105.50*	*105.50*	*105.50*	*105.50*	......	......	......	......
Boston.........*	95/103*a*	102/112*a*	94/98*a*	94/98*a*	94/98*a*	94/98*a*	......	......	......	......	......	25.92	31.60
³	*87.00n*	*87.00n*	*114/116*	*114/116*	*114/116*	*114/116*	*116.00*	*117.00*	*117.00*	......	......	......	......
Chicago........**	98.00	101.00	90.00	105.00	112.00	115.00	110.00	......	......	139.00	139.00	22.45	27.37
	103.00	*103.00*	*111.00*	*111/112*	*111/112*	*113/114*	*120.00*	*120.00*	*120.00*	......	......	......	......
Cincinnati......*	91.00	92.00	80.00	88.00	92.00	100.00	107.25	......	......	128.00	128.00	25.00	30.48
	96.00	*98.25*	*105.50*	*104.50*	*105.50*	*106.00*	*130.25*	*130.25*	*130.25*	......	......	......	......
Cleveland......**	94.00	96.00	96.00	100.00	100.00	101.00	......	......	......	......	......	25.37	30.93
	......	......	*107.00*	*107.00*	*107.00*	*107.00*	*116.00*	*116.00*	*116.00*	......	......	......	......
Dallas.........*k*†	70.00	80.00	65.00	60.00	60.00	60.00	130.00	......	......	130.00	130.00	18.72	22.80
Denver........*	*Not in stock*		*117.00*	*118.00*	*118.00*	*118.75*	*125.00*	*137.75*	*140.50*	......	......	13.92	16.98
Detroit.........‡	112.00	116.00	105.00	112.00	118.00	118.00	......	......	......	......	......	25.00	30.48
	89.50	*93.50*	*106.50*	*100.25*	*99.25*	*101.75*	*114.00*	*114.00*	*114.00*	......	......	......	......
Kansas City....*	110.00	110.00	110.00	110.00	110.00	......	......	......	......	......	......	16.56	20.16
	125.00	*125.00*	*129.00*	*129.00*	*129.00*	*135.00*	*170.00*	*170.00*	*170.00*	......	......	......	......
Los Angeles....¹	*97.00*	*97.00*	*97.00*	*97.00*	*97.00*	*97.00*	*128.00*	*138.00*	*128.00*	......	......	16.61*ab*	20.25*ab*
Minneapolis....♯	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*165.00*	*165.00*	*165.00*	......	......	19.89	24.25
Montreal.......*ab*	88.00	97.00	88.00	88.00	100.00	118.00	......	......	......	99.50	99.50	......	......
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	......	*105.00*	*105.00*	*105.00*	......	......	......	......
New Orleans...†	100.00	100.00	92.50	85.00	90.00	94.00	118.50	......	......	150.00	148.00	18.72	22.80
†	*108.50*	*108.50*	*117.00*	*118.50*	*118.50*	*118.50*	*117.00*	*124.00*	*124.00*	......	......	......	......
New York......²	112.50	115.50	120/125	123/128	123/128	123/128	158/168	......	......	228/258	228/258	25.92	31.60
	......	......		*Range from $125.00 to $130.00*			*148/163*	*153/163*	*153/163*	......	......	......	......
New York......**	93.75	95.25	77.25	94.00	95.00	98.50	92.50	......	......	175.00	240.00	......	......
	96.00	*96.00*	*104.00*	*105.00*	*105.50*	*106.50*	*106.00*	*127.00*	*127.00*	......	......	......	......
Philadelphia....‡		Range from $115.00 to $135.00				110/127	110/127	......	......	210/220	210/220	25.92	31.60
		Range from $128.00 to $165.00				*125/132*	*133/155*	*150.00*	*150.00*	......	......	......	......
Pittsburgh......†		Range from $95.00 to $100.00					120.00	......	......	120.00	130.00	25.92	31.60
	120.00	*120.00*	*120.00*	*120.00*	*120.00*	*120.00*	*125.00*	*145.00*	*145.00*	......	......	......	......
St. Louis.......‡	108/114	110/116	114/120*d*	115/124	118/124	119/125	......	......	......	......	......	18.72	22.80
	......	......	*117/123i*	*124/127*	*124/127*	*125/128*	*155/173*	*155/173*	*177/193*	......	......	......	......
San Francisco..*A*†	*84.00*	*84.00*	*86.00*	*85.00*	*83.00*	*82.00*	*82.00*	*84.00*	*84.00*	......	......	12.22	14.91*a*
Seattle.........†	*72.50*	*72.50*	*72.50*	*72.50*	*72.50*	*72.50*	*75.00*	*81.00*	*84.00*	......	......	......	......

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. ♯ Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type· Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8, 10, & 12 ft. lengths. *e* 8 to 16 ft. lengths. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *n* #3. A Rail freight rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock.

For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4′ by 8′ panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅝", $171.00; on ¾", $191.00. Exterior plyform ⅝" $190.00, ¾" $212.00. For other centers add rail freight increment from table on proper size Oiling and edge sealing charges included. *a* Lower rate by water shipment *b* 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950*a* Single or Double Thickness — A quality	WINDOW GLASS: B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta................	79%	80%	$0.2365
Baltimore..............	78%*d*	80%*d*	.2365
Birmingham.............	83%	83%	.1840
Boston.................	77–10%	77–10%	.2365
Chicago................	76%	76%	.2365
Cincinnati.............	76%	76%	.2365
Cleveland..............	76–10–10%	76–10–10%	.2765
Dallas.................	75%	75%	.2440
Denver.................	79%	79%	.2415
Detroit................	76–10–10%	76–10–10%	.2365
Kansas City............	80–10%	80–10%	.2415
Los Angeles............	73%	78%	.2390
Minneapolis............	75–10%	75–10%	.2415
Montreal...............	40–5%*bc*	40–10–5%*b*	21.35*h*
New Orleans............	78%	79%	.2415
New York...............	80–10%	80–10%	.3975*g*
Philadelphia...........	77%	79%	.2365
Pittsburgh.............	80%	80%	.2090
St. Louis..............	80–10%	80–10%	.2415
San Francisco..........	70%	70%	.2365
Seattle................	78%	76%	.2390

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U.S.; $1.75 per 100 lbs. higher in Canada.

Glass; a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.10.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine................	.189 –.1965	.2215–.229	.2415–.249
Rocky Mtn. States..............	.189 –.2015	.2215–.229	.2415–.254
Pacific N. W. States............	.1865–.199	.219 – 2315	.239 –.2515
Pacific S. W. States............	.184 –.1915	.2165–.219	.2365–.2415

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	By Rail: Fir
12-in. at butt..............	6-in.	30 to 50-ft.	$0.51	....
12-in.— 2-ft. from butt......	6-in.	50 to 59-ft.	.54	....
12-in.— 2-ft. from butt......	6-in.	60 to 69-ft.	.58	....
12-in.— 2-ft. from butt......	6-in.	90 to 100-ft.	....	....
13-in.— 3-ft. from butt......	5-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt......	6-in.	50 to 69-ft.	.50/.68	....
14-in.— 2-ft. from butt......	6-in.	70 to 79-ft.	.78/.83	.93
14-in.— 2-ft. from butt......	5-in.	80 to 85-ft.	.83/.93	.94
14-in.— 2-ft. from butt......	5-in.	85 to 89-ft.	....	1.00
14-in.— 2-ft. from butt......	5-in.	90 to 100-ft.	....	1.03

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots;

		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston..........	Oak...............*i*	....	....	....	....
	Pine..............*i*	....	....	....	....
New York........	S. L. Sap Pine.....	$2.00	$4.00	$3.00	$5.00
	Mixed Oak.........	2.50	4.50	3.50	5.50
Birmingham......	Hardwood:.........	2.40	3.88*a*	2.85	4.58*a*
Chicago.........	Red Oak...........	....	3.20*a*	....	4.10/4.20*a*
Los Angeles.....	Douglas Fir........	...	....	....	....
	Redwood:..........	....	....	....	....
Philadelphia....	Red Oak...........	2.55	3.90	3.45	5.10
St. Louis.......	White Oak.........	2.20	....	2.45	..
	Red Oak...........	2.10	2.65*a*	2.30	3.00*a*
	Sap Pine or Cypress.	....	2.55a	....	2.85*a*
San Francisco...	Douglas Fir........	2.08*ef*	3.08*ef*	2.73*bf*	3.93*caf*
Montreal........	Birch or Maple.....	....*h*	....*h*	....*h*	....*h*

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8′. *c* Em cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

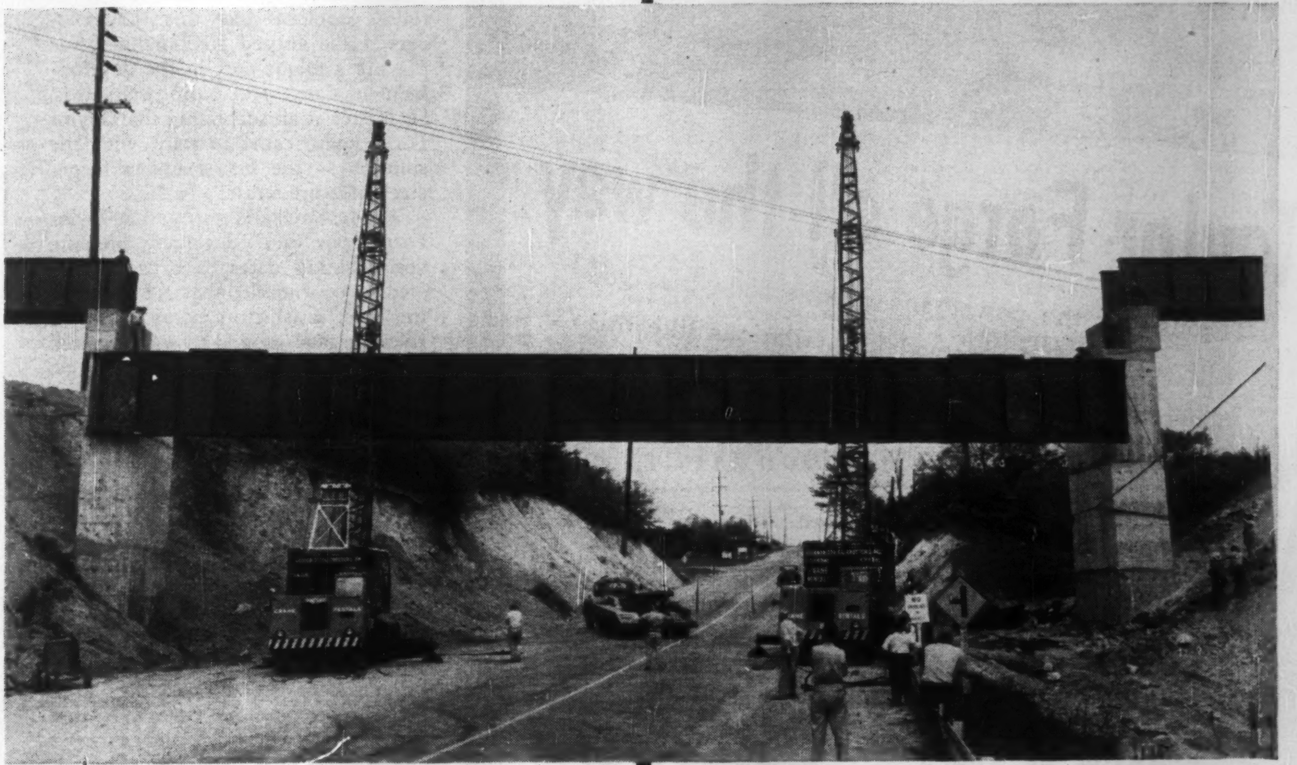
Bleaching powder in drums f.o.b. works, per 100 lb................	$5.02
Chlorine cylinders, liquid. per lb. f.o.b. works....................	.095
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton........................	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb..........	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense....................	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works.....	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works::::.... ...	10.35

(*Continued on page 59*)

52 ton girders placed in four hour deadline

Just east of Chattanooga the Southern Railway, route of the famous "Chattanooga Choo-Choo", crosses Highway 58, an important link with TVA dams, reservoirs and hydroelectric plants to the north. To erect girders for the new overpass on this well-traveled highway, Atlanta Steel Erectors, Inc., of Atlanta, Georgia, had to work fast because the highway could only be closed to traffic for four hours at a time. But with two 25-ton BAY CITY CraneMobiles employing 55-feet of boom on a twin lift operation, both of the 52-ton, 115-ft. long girders went up on schedule.

One of the girders was hauled from a railroad siding two miles away, and the highway closed to traffic. When the girder was set in place, the highway was reopened while the other girder was brought up. Each operation was completed by the team of CraneMobiles, part of a fleet of four owned by Atlanta Steel Erectors, well within the four hour time limit. Industrial Steel Company was general contractor and steel fabricator on the job. For performance like this on your difficult erection jobs, consult your nearest BAY CITY dealer for complete information on the BAY CITY Cranemobile.



Write for catalogs describing BAY CITY Crawlers of ½ yard and up and BAY CITY CraneMobiles and CraneWagons in capacities to 25 tons.

BAY CITY

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

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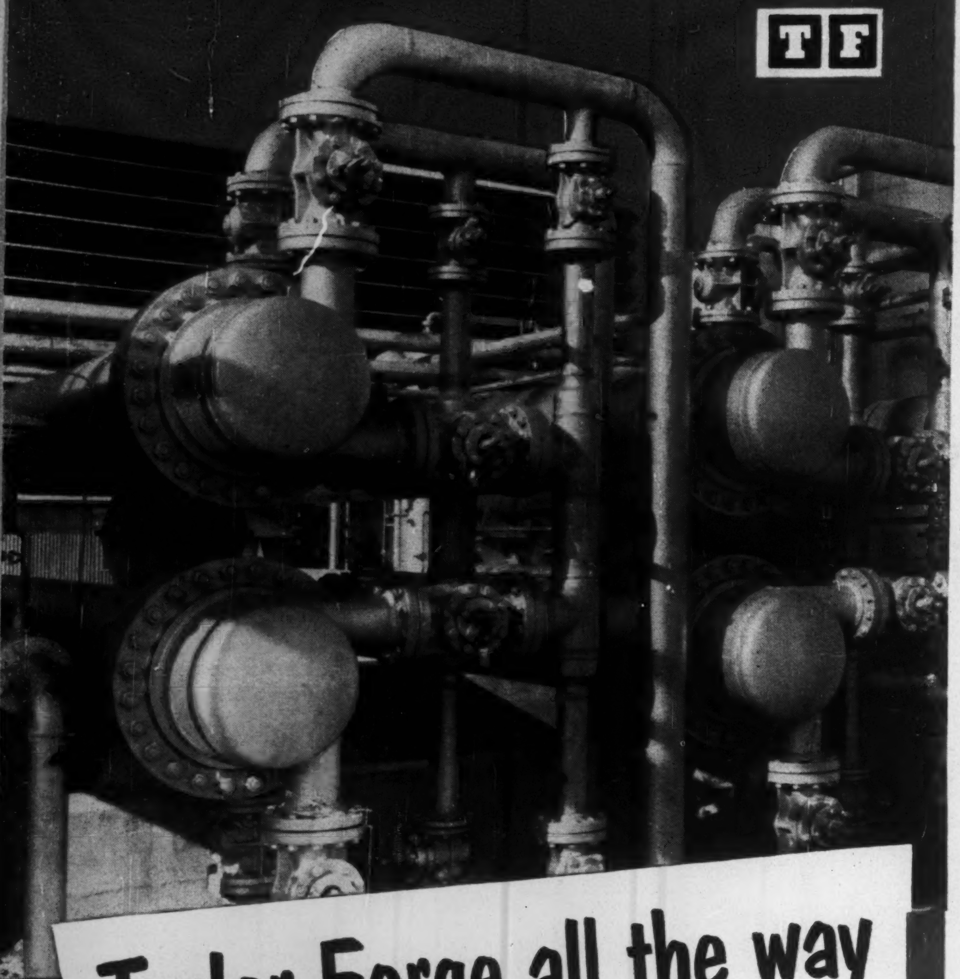

Taylor Forge all the way

Throughout the power and process industries you will see hundreds of model installations like this where someone who wanted to be sure has specified Taylor Forge all the way through... WeldELLS,® flanges, welding necks, nozzles.

Whatever your needs—simple or complex—it will pay you to *use* all the way through, the products that have *led* all the way through.

See your Taylor Forge Distributor for up-to-the-minute facts.

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P.O. Box 485, Chicago 90, Illinois • *Offices in all principal cities*
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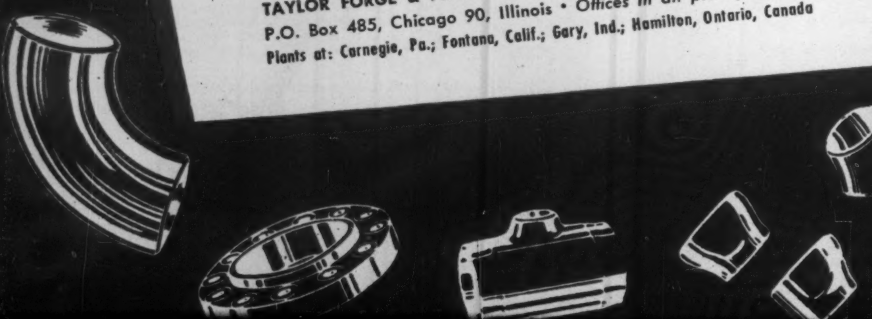
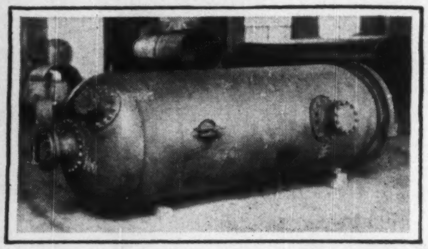


(*Advertisement*)



A New Development that's 37 Years Old

When you cut a hole in the shell of a pressure vessel you of course weaken it. But, how much?...or, to put it another way, how much reinforcement is necessary to make the shell surrounding an opening as strong as any other part of the shell?

In the old days of low pressure and over-sizing that hadn't been much of a problem. But when pressures began to climb fast (about 1915) it became a tough one.

Taylor Forge had already begun to relish problems like this: had pioneered the forged steel flange; was playing a major part in the development of flange and piping standards. So it isn't at all surprising that Taylor Forge again came forward with the solution — the first seamless forged steel pressure vessel nozzles.

The research and testing that Taylor Forge put into designed pressure vessel outlets dates back to the riveted, sweep nozzles that are still giving safe, satisfactory service. But as riveting gave ground to welding, still more critical analyses were made to determine the exact requirements of nozzles designed for welding.

These many years of tests and studies were fully summed up in a paper entitled "Effects of Openings in Pressure Vessels" which was presented by the late J. Hall Taylor and Professor E. O. Waters at the June 1933 meeting of the ASME. It is still authoritative in this field.

Yes, a new idea that is 37 years old! So thoroughgoing was its first development—so critical the steps taken to maintain its leadership—that today Taylor Forge Seamless Nozzles and Welding Necks are the standards of the entire pressure vessel and piping industry.

An episode in the story of
Taylor Forge leadership in designed piping

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over,			STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over,			BRICK Per M. in quantity		LIME Per ton, in paper, Carload lot,		
	3x12x12 in.	4x12x12 in.	8x12x12 in.	8x12x12 in.	10x12x12 in.	12x12x12 in.	Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.00	$247.00	$327.00	$342.00	$381.00	$27.38	$27.38	$19.00	$17.50	$.....
Baltimore	186.00	198.35	372.00	421.50	549.00	627.00	36.00k	41.00k	32.00	21.50	.....
Birmingham	126.00p	136.00p	......	284.00p	......	......	26.50ff	32.50gg	29.25	24.00	.....
Boston	196.00†	209.00†	392.00†	283.25†	......	......	36.85p	39.85p	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	......	......	......	26.00	28.00	31.00	27.00	.....
Cincinnati	185.00j	195.00j	260.00jdd	......	......	......	45.00j	46.00j	26.00j	26.00j	.....
Cleveland	170.00**	181.00**	......	......	......	......	34.50	34.50	28.25	23.25	32.00ee
Dallas	......	118.00	......	......	......	......	19.75	32.25	32.00	21.80	.....
Denver	......	......	......	......	......	......	34.00	41.00	34.80bb	28.00bb	34.00bb
Detroit	130.00	138.00	259.00	......	315.00	360.00	37.50cc	38.50cc	34.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	28.50	.....	32.00	27.50	28.50
Los Angeles	r	r	r	r	r	r	27.50§	.....	34.00	34.00	35.00
Minneapolis	175.00p	196.00p	407.00p	196.00n	......	......	35.00vp	45.00	40.00bbe	30.00bbe	42.00bbde
Montreal	165.00ag	181.00au	325.00au	230.00	248.00e	......	39.50	46.00	34.80	22.00	13.75u
New Orleans	170.00	170.00	310.00	380.00	......	......	31.00	.....	.....	28.00	28.00
New York	147.30h	157.10h	216.00ch	238.10hn	......	......	41.00	.....	36.00	32.00	.....
Philadelphia	156.30	166.80	312.70	375.20	......	......	30/34	35/42	27.60	25.60	3.17
Pittsburgh	138.00	151.00	260.00	228.00	297.00	341.00	36.00	46.00y	25.00	23.00	2.97m
St. Louis	150.00cc	168.50cc	332.50cc	465.00cc	439.00	621.50	41.50sl	41.50s	.90saa	.75saa	1.25aaspee
San Francisco	156.85a*	177.10a*	235.30dda*	......	......	......	37.00	.....	26.60	26.60	2.65m
Seattle	223.00cc	230.00cc	320.00	240.00ccw	......	......	39.00s	49.00s	42.00shh	37.50	3.90mhh

† F.o.b. yard Roxbury. a Smooth. b Per 50 lb. bags. c 6 x 12 x 12 in.-3 cell. d Pulverised hot. e 5%, 10th following month. g 5½ x 8 x 12. h F.o.b. trucks, job site N.Y.C. j Truck load or over. k $1.00 discount l Red face. m Per bbl., 180 lb. n 7½ x 7½ x 12. Speed title. p Truck lots. q Provincial and Municipal tax extra. r Not used because of earthquake danger. s 2% discount for cash. t 5½ x 8 x 11½. u Tax exempt. v Sand lime. w 5 x 8 x 12. y Stacked. z Pebble lime price per 80 lb. sack. aa Price per sack. Lime not sold per ton. bb LCL. cc Truck delivery. dd 6 x 12 x 12. ee Pebble lime. ff 80% common. gg Select. hh LCL. § F.o.b. yard; ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 800-lb. (Approx.) bbl.	WHITE LEAD Per 100 lb. in 100 lb. cases	READY-MIXED PAINT Per gal., drums			ROOFING SUPPLIES: Carload lots f.o.b. factory				
	Dry a	in oil w	Graphite b	Aluminum c	Ferric Oxide d	Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 300 lb. bbl. per ton
Atlanta	$17.75	$28.275	$3.26	$3.51	$3.01	$2.74	$3.01	$2.98	$0.405	$39.75
Baltimore	17.50	27.90	2.75	4.25	3.35	2.60	4.43	4.43	.47	45.00
Birmingham	17.75	28.275	3.90	3.40	....	2.93	2.93	2.93	..	42.00ee
Boston	17.50	27.90	....	....	....	2.97gg	2.82gg	2.82gg	.42v	50.50q
Chicago	17.50	27.90	....	....	....	2.91‡u	2.86‡o	2.86‡o	40.00‡bbr	50.00‡
Cincinnati	17.50	27.90	....	....		2.65	2.46	2.46	46v	49.36
Cleveland	17.50	27.90	2.27pgg	2.53gg	2.57gg	2.65s	2.46o	2.46o	40y	42.70hh
Dallas	17.75	28.65	....	4.05	..	3.50q	3.75o	4.35o	36	58.5hh
Denver	18.00	28.40	3.29	5.15	3.04	2.65	2.25o	2.35o	43#	45.00
Detroit	17.50	27.90	2.35	3.25	2.50	2.65	2.46l	2.46	.50	46.00
Kansas City	17.50	28.65	3.45	3.00ve	2.65	3.20	3.00o	3.00	43	57.00
Los Angeles	17.50	28.15	3.30e	4.50e	4.20e	3.10e	2.00e	l	64e	
Minneapolis	17.50	29.88/28.02	....	....	....	2.65idd	2.46hidd	2.46hidd	44idd	44.00r
Montreal	...	21.95	2.95Dff	4.05Eff	3.25Fg	4.00t	3.65tf	3.65t	1.06*t	3.30k
New York	17.50	27.90	....	....	....	2.65#	2.46#o	2.46#o	.44#z	44.00#
Philadelphia	17.50	27.90	3.25	3.65	3.15	2.54	2.94	2.94	37	26.00
Pittsburgh	17.50	27.90	2.65	2.85	3.15	2.75	2.60o	2.60o	38	49.00
St. Louis	17.50	27.90	....	....	....	2.50	2.46h	2.46h	40y	48.45
San Francisco	17.50	28.15	2.40	....	3.40	2.95	4.00aa	..	49	....
Seattle	17.50	28.40	3.07mcc	2.93mcc	...	3.58mocc	3.05hmcc	....	.59mcc	52.00mcc

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. a Red lead prices change frequently due to pig lead price changes. b U. S. War Dept. Spec. 3-49A. c ASTM Spec. D266–31. d 80% minimum ferric oxide. e 15 lb. f Per 432 sq. ft. g F.o.b. yard, Roxbury. h Per roll, 65 lb. i Net carload lot prices; Minneapolis and vicinity. k Per cwt. l Not used. m 1% discount for cash. n F.o.b. city. o Per 60-lb. p 6-drum, 50 gal. ea. q Per 90-lb. roll. r F.o.b. factory, Chicago. s 466 Med. t Federal tax included. u Per 90 lb. square. v Per ton. w Price to large paint contractors is $1.25 less x Mineral surfaced. y 55-gallon container. z Drums. aa Approximate cost per 100 lbs. bb Roofers coating and cement; Price per ton. cc LCL, truck delivery. dd 2% cash discount. ee Asphalt pitch in 100 lb. package. ff 5-gal. drums. gg F.o.b. factory. hh Incl. freight. D. Std Black. E. Ready-mixed. F. Over 80% ferric oxide. * Aver. wt. approx. 425 to 550 lbs. drum; # Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor	
								Building	Heavy Const.
Atlanta	$3.10	$2.50	$2.85	$2.60	$2.75	$2.90	$2.90	$1.33	$1.33
Baltimore	3.20d	2.75	3.325i	3.10/3.25	3.075i	2.975	2.975t	1.675i	1.675i
Birmingham	3.25	2.50	2.925h	2.32	2.72	3.00	3.025k	1.375	1.475
Boston	3.185e	2.75	3.325i	3.20	3.30I	3.13R	3.20d	2.14Y	2.14Y
Chicago	3.55b	3.30e	3.40k	3.15w	3.625s	3.53f	3.39e	2.50b	2.50b
Cincinnati	3.325	3.075	3.19k	2.85/3.35	3.10	3.28N	3.335V	2.12	2.02
Cleveland	3.375l	3.325#	3.325j	3.175	3.325	3.325	3.325e	2.575	2.575
Dallas	3.50	2.75	2.875	2.75	3.437	3.00	3.00	1.45	1.45
Denver	3.50	2.85	2.85	2.78	3.30	3.00	3.05	1.875	1.875
Detroit	3.45ve	3.21v X	3.35r	3.20v	3.49dl	3.52H	3.125k	2.45e	2.45e
Kansas City	3.625	2.75	2.90	2.725/2.97	3.25	3.14O	3.20k	2.03	2.03
Los Angeles	3.40	2.825m	3.175h	2.72d	3.56Sw	3.20	3.35e	2.15l	2.15l
Minneapolis	3.225	2.80	2.97	2.75	3.00	3.15n	3.00	2.05	2.05
New Orleans	3.10	2.52	2.90m	2.70	2.725	3.00h	3.00e	1.425	1.425
New York	4.15br	3.57bJ	3.975p	3.84J	4.15A	3.63asF	3.815bL	2.415J	2.415J
Philadelphia	3.92i	3.20	3.63iM	2.975/3.72e	3.625S	3.65m	3.615o	1.95	2.25
Pittsburgh	3.625h	3.20h	3.225h	3.35h	3.375h	3.50	3.375h	2.10h	2.10h
St. Louis	3.62c	3.125A	3.10h	3.125h	3.25h	3.50c	3.39H	2.175h	2.175h
San Francisco	3.65be	2.98h	3.175A	2.835e	3.50ah	3.30 U	3.35K	2.15h	2.15h
Seattle	3.40d	2.75d	2.95d	2.88	3.25d	3.135 X	3.26T	2.35d	2.35d
Montreal*†	2.00	1.80	1.90	1.70	2.00	1.90	1.90	1.25	1.40

* Cost of living bonus now included in basic wage. # Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

a 6 hr. day. b 7 hr. day. c Incl. 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF d Incl. 10¢ H&WF. e Incl. 10¢ VF. f Incl. 6% WF. g Incl. 11½¢ WF h $2.725 homes & housing plus 7½¢ WF. i Incl. 17¢ WF j Incl. 10½¢/hr. WF. k Incl. 7½¢/hr. WF. l Incl. 4% VF. m Incl. 5¢/hr WF. n Incl. 25¢ H, W, Ins., Vac. & Retirement. o Incl. 10¢ PF, 7¢ WF. p Incl. 3% WF, 3% PF. r Incl. 4% WF and 20¢ PF. s Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. t Incl. 7½¢ H&WF. u Incl. 1½% PF. v Incl. 10¢ WF. w Negotiating. x Incl. 8¢ WF. y Incl. 22½¢ WF. z Incl. 7½¢ IF, 5¢ H&WF. A Incl. 15¢ WF, 15¢ PF & 20¢ B.F. B Incl. 3% WF, C Incl. 2½¢ H&WF. D Plus 6% WF, plus travel pay per day. F Plus $4/per day Annuity contrib. H Incl. 7¢ WF, 6% VF. I Incl. 15¢ H&WF. J Incl. 5% WF. 6PH. K Incl. 10¢ WF, 12½¢ VF, 7½¢ PF. L Incl. 3% WF, 3% PF, 2% VF, 1% EF. M Incl. 7½¢ PF. N Incl. 1% WF. O Incl. 2% WF, 1% PF. R Incl. 12¢ WF and 1¢ apprentice. S Incl. 12½¢ H and WF. T Incl. 21¢ H, W & VF. U Incl. 7½¢ WF, 4% VF, 1% PF. V Incl. 8½¢ WF. W Incl. 2% VF. X Incl. 6¢ VF. & 7½ H & WF Y Incl. 7¢ H & WF.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Nov '54	Dec '54
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Struct. Iron Workers (8 hr. day)......Remachadores.	av. per hr.	1.37*	1.37*
Struct. Steel Shapes			
3"-15" x 12 meters	per metric ton	1428.62	1428.62
Reinf. Steel, Corr. Rods			
⅜" x 11 meters	per ton	1490.00	1490.00
½" x 11 meters	per ton	1490.00	1490.00
⅝" x 11 meters	per ton	1490.00	1490.00
¾" x 11 meters	per ton	1490.00	1490.00
⅞" x 11 meters	per ton	1490.00	1490.00
1" x 11 meters	per ton	1490.00	1490.00
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	73.00	73.00
Rose Gravel	per tr. load	66.00	66.00
Cement, Std. Port. (Tolteca)	per ton	160.00	180.00
Lumber			
3rd Class Pine	per M ft.	850.00	850.00
1st Class Pine	per M ft.	1500.00	1500.00
2nd Class Pine	per M ft.	1300.00	1300.00

* 1st & 2nd floors. Aver rate $4.38

ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): **$3.188 ENR Common Average: $2.022**

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅜"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	25/32" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION† loose, per 40-lb bag	3 batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag	3" batts per M sf	ALUMINUM FOIL per roll of 250 sf Single	Double
Atlanta	......	$60.00	$40.00	$70.00	$54.00	$91.00	$53.00	$1.08	.....	$1.45[b]	$56.00	......	......
Baltimore	$46.50[f]	41.00[f]	31.00[f]	52.50[f]	62.00[f]	104.00[f]	66.00[f]	1.30	$65.90[a]	1.60	45.00	$4.25	$6.35
Birmingham	67.00	56.00	46.75[b]	75.00	64.55	107.10	64.55	1.32	72.00	1.75	77.00	3.46[g]	5.20[g]
Boston	46.50[m]	41.00[m]	31.50[m]	48.00[m]	64.00[m]	109.00[m]	72.00[hn]	1.45	75.00	1.40	41.00	5.30	7.90
Chicago	67.00	50.00	34.00	59.00	77.00	113.00	73.00	1.60	84.00	.....	62.00	4.30	6.40
Cincinnati	44.01[a]	38.08[a]	30.08[a]	45.51[a]	59.00[a]	98.50[a]	58.50[a]	.....	61.00[a]	1.25	75.00	5.95	8.95
Cleveland	45.50	36.50	40.00	65.00	75.00	110.75	75.00	.....	75.00	2.20	60.00	0.405[p]	0.055[p]
Dallas	55.00	52.50	40.00	62.50	73.50	122.50	70.00	1.90	65.00	1.35	65.83	4.25	6.35
Denver	60.00	52.50	40.00	60.00	72.90	123.00	71.90	75.00	71.00[i]	1.30	50.00	11.00[r]	21.00[r]
Detroit	55.00	48.50	35.75	54.00	58.00[ce]	115.00[ce]	58.00[ce]	.....	77.00[di]	1.95[b]	.....	......	......
Kansas City	65.00	55.00	42.00	65.00	75.00	120.00	75.00	1.35	75.00	1.35	55.00	0.0175[p]	0.025[p]
Los Angeles	50.00	45.00	0.31[b]	53.00	71.87	121.25	70.00	.....	80.00	1.35[st]	48.00[t]	17.00[o]	25.40[o]
Minneapolis	64.00	75.00	0.40[b]	65.00	70.00	114.00	70.00	1.30	78.00	1.30	78.00	6.50	9.00
Montreal	58.00	......	39.00	64.00	......	......	......	.....	.....	.....	.....	......	......
New Orleans	65.00	50.00	45.00	65/70	65.00	100/115	70.00	1.95	79.00	.....	.....	15.66[u]	27.66[v]
New York	50.00	44.50	34.00	51.00	65.00	108.00	65.00	1.55	72.00[l]	1.55	72.00[l]	5.20	7.00
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	49.20	.....	70/75	65/75	70/75	5.50/6	7/7.50
Pittsburgh	65.00	55.00	40.00	68.00	60.00	102.50	57.50	1.80	70.00	1.80	70.00	4.00	6.00
St. Louis	60.00	57.50	38.00	58.00	60.00	110.00	70.00	1.75	75.00	1.20	45.00	......	......
San Francisco	49.00[c]	41.50[c]	0.33[b]	53.00[k]	......	94.00	60.25	1.60	72.00	1.55	53.00	4.78	7.50
Seattle	57.00	50.50	40.00	59.00	71.40	120.35	70.20	1.50	86.00	1.65	62.00	4.25[g]	6.75[g]

[a] for hand packing [b] per 30# bag [c] carloads [d] 4", fob Alexandria, Ind [e] 56,000 sq ft up quantity [f] full trailer loads [g] 80# kraft paper backing [h] LCL [i] flameproof [j] 11,000 sq ft up quantity [k] plain core; asph core $56/M sq ft [l] 2-in: $52/M sq ft [m] 10 ton quantities [n] distributor's siding [o] per Msf roll [p] per sf [r] per cwt [s] per 27# bag [t] fob plant, Santa Clara [u] honeycomb, 1¼-in [v] honeycomb, 2½-in

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home insulation pellets (per bag of 4 cu ft)	Plaster aggregate	Concrete aggregate[l] Treated	Untreated	ALUMINUM SHEET[h] Flat[j] .102" th 36"x96" & 48"x144" per lb[t]	Corr roof .032" th 35"x12" per sh[u]	STAINLESS STL SHEET*-TYPE 302[g] 20 ga 48"x96–120" per cwt	28 ga 36"x120" per cwt	COPPER WATER TUBING-TYPE L 2000 ft lots per ft[a] ⅜"[d]	½"[c]
Atlanta	$29.00	$36.00	$1.45	$1.35	$1.50	....	$0.359[n]	$7.067[n]	$53.68	$61.18	$14.49[f]	$20.29[f]
Baltimore	20.16	32.00	0.95	1.15	....	$1.15	0.370	4.377[r]	52.75	60.25	0.1449	0.2029
Birmingham	32.00	43.00	1.30	1.35	1.80	....	0.379	7.809	52.90	61.65	0.1449	0.2029
Boston	21.00	......	1.15	1.18	....	1.30	0.414[q]	23.60[gz]	52.00[dd]	57.50[dd ff]	0.1449	0.2029
Chicago	34.60	34.60	1.45	1.50	1.50/1.60	....	0.406[o]	8.346#[p]	56.25#[ee]	63.75#[ee]	0.1449	0.2029
Cincinnati	25.00*	22.00*	.....	1.75	1.75	1.75	0.408	9.72	56.10	69.10[ff]	0.149	0.203
Cleveland	26.00	40.00	1.25	1.32	1.40	....	0.359	7.37[aa]	52.00	59.50	14.49[f]	20.29[f]
Dallas	29.80	31.80	1.20	1.25	1.30	....	0.379	0.439[r]	55.50	63.00	0.1449	0.2029
Denver	24.00	24.00	1.40	1.35	....	1.50	0.379	8.339	54.07[gg]	61.50[gg]	0.1449	0.2029
Detroit	24.00	24.00	1.27	1.33	1.42	1.42	0.406	9.717	56.50	63.50	n.a.	0.1449
Kansas City	28.00	35.00	1.10[r]	1.20[s]	1.30[s]	1.30[s]	0.359	7.77	54.77[hh]	62.27[hh]	0.2029	0.2468
Los Angeles	25.00	26.00	0.96[ii]	0.91[ii]	1.13[ii]	0.96[ii]	0.359	8.48	58.60	67.85	0.2029	0.2029
Minneapolis	31.00	31.00	1.30	1.60	....	1.80	0.412	7.38	56.76	55.01	0.1375[d]	0.1925[d]
Montreal	......	......	.....	.....	....	....	......	......	......	......	......	......
New Orleans	35.00	37.00	1.50	1.20	1.25	1.25	0.359	0.366[aa bb]	56.68	64.18	......	......
New York	23.00	29.00	1.05	1.03	1.19	1.11	0.379#[ov]	7.55#	54.82	62.32	14.49[f]	20.29[f]
Philadelphia	23/25	32.00	1.35	1.35	1.35	1.40	26.50#[wz]	7.55#	53.23#	60.98#	14.49[f]	20.29[f]
Pittsburgh	......	......	1.25	1.25	1.30	1.25	28.00[wy]	0.420[r]	53.70	59.20	0.23	0.28
St. Louis	......	......	1.25	1.50[jj]	1.50[jj]	....	0.379[t]	8.339[o]	53.14[kk]	71.14[kk]	0.2029[e]	0.2468[m]
San Francisco	24.00	26.00	1.05	1.03	....	1.24	0.400	0.340[ncc]	61.00	68.00	0.1449	0.2029
Seattle	33.00	36.50	1.45	1.25[k]	1.65	....	0.359	7.067	60.50[ee]	68.00[ee]	0.1449	0.2029

† trucklots, delivered * fob whse # delivered [a] fob city [b] ½" O.D. [c] ⅝" O.D. [d] 10M ft & over [e] 2–10M ft; 10M ft & up: $0.1925/ft [f] per 100 ft [g] 5 tons & up; cold roll, anneal & pickled; 2B finish [h] 15M lb [i] 3003 alloy; 1100 alloy: $0.406/lb [j] 1100 & 3003 alloy, mill finish [k] per bag of 3 cu ft [l] treated has air entraining agent; untreated does not [m] 2–10M ft; 10M ft up: $0.2342/ft [n] fob plant, fr allow [o] 5M lb & up [p] 100 sq ft quantity [q] 2M lb quantity [r] per lb [s] fob plant [t] 36"x96" 10.81 lb/sh; 48"x144": 21.7 lb/sh [u] 19.31 lb/sh [v] in 4M-lb skids; $0.296/lb in 1M-lb cases [w] 48"x144" [x] 36"x96" $13.25/sh [y] 36"x96": $14.00/sh [z] per 100 sq ft [aa] 16M lb & up [bb] fob mill [cc] 26"x6–12' [dd] add $0.75/cwt for boxing [ee] 4 tons & up [ff] 26 ga [gg] add $2/cwt boxing; $0.75/cwt on skids [hh] on skids full crating; 20 ga, $56.27; 28 ga, $63.77 [ii] 300-bag lots [jj] per 100-lb bag [kk] mill shipment; add $2 per cwt for immediate del

EQUIPMENT OPERATOR WAGE RATES

	Truck drivers 1½ T	−4 cy Dump	+4 cy	Tractor Operators incl bulldozers 34–49 hp	70–100 hp	100 & over	Tractor scraper 15–16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	1.25	1.50	1.50	2.335	2.335	2.335	2.325	2.85	2.85	2.325	2.10	1.55
Baltimore	1.65[a]	1.80[a]	1.90[a]	2.45	2.60	2.45	2.60	3.10[b]	3.10[b]	2.25	3.10[b]	2.25
Birmingham	1.37	1.65	1.92	2.385	2.385	2.385	2.525	2.525	2.525	2.385	2.11	1.45
Boston	1.945[c]	.....	.....	2.825[d]	2.825[d]	2.825[d]	2.825[d]	3.20	3.20	3.20	2.555	2.18[e]
Chicago	1.90[f]	.....	.....	2.85[g]	3.00[h]	2.90[i]	2.70	3.30	3.30	2.80	2.80	....
Cincinnati	2.00[j]	2.00[j]	2.00[j]	2.85	2.85	2.85	2.85	3.10	3.10	3.10	3.10	3.10
Cleveland	2.42	2.42	2.42	3.05	3.05	3.05	3.05	3.30	3.30	3.05	2.925[k]	2.925
Dallas	1.45	1.45	1.45	1.45/2.625[l]	1.50/2.625[l]	1.50/2.625[l]	1.50/2.625[l]	1.50/2.625[l]	1.60/2.625[l]	1.50/2.625[l]	1.45/2.00[l]	1.45/1.55[l]
Denver	2.00	2.00	2.10	2.00	2.61	2.61	2.61	2.78	2.78	2.61	2.61	2.225
Detroit	2.31[a]	2.31[a]	2.31[a]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	2.925[m]	....
Kansas City	1.965[n]	2.065[o]	2.065[p]	2.175	2.725[q]	2.725[q]	2.725[r]	2.97	2.97	2.585[s]	2.725[t]	2.115
Los Angeles	2.225[u]	2.225[u]	2.285[u]	2.80[m]	2.80[m]	2.80[m]	3.21[m]	3.03[m]	3.03[m]	2.94[m]	2.50[m]	2.41[m]
Minneapolis	2.05	2.05[v]	2.20[w]	2.43	2.65[v]	2.87[x]	2.65	2.87[y]	3.13[z]	2.43	2.32	2.15
New Orleans	1.525	1.525	1.525	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.10	1.60
New York	2.12¼[aa]	2.52[bb]	2.52[bb]	3.176[cc]	3.176[cc]	3.176[cc]	3.31[cc]	4.095[cc]	4.095[cc]	3.31[cc]	3.31[cc]	2.78[cc]
Philadelphia	1.825/2.025[u]	1.825/2.025[u]	1.825/2.025[u]	2.97/3.72[m]	2.97/3.72[m]	2.97/3.72[m]	2.97/3.72[m]	2.97/3.72[m]	2.97/3.72[m]	2.97/3.72[m]	2.79[m]	1.95[m]
Pittsburgh	2.125	2.125	2.125	2.875	3.125	3.175	3.175	3.275	3.275	3.175	3.175	2.125
St. Louis	2.10	2.10	2.10	3.125[u]	3.125[u]	3.125[u]	3.125[u]	3.125[u]	3.125[u]	3.125[u]	2.525[u]	2.10
San Francisco	2.10	2.10	2.33[w]	2.845	2.845	2.845	2.845	3.175	3.175	3.005	2.455	2.175
Seattle	2.405[n]	2.405[dd]	2.605[ee]	2.53	2.73	2.73	2.73	3.08	3.08	2.83	2.53[o]	2.40
Montreal	1.25	1.25	1.25	1.63	1.63	1.63	1.63	1.89	1.89	1.63	1.70	1.50

[a] incl 5¢/hr HWF [b] straight time, broken, $3.25 [c] 2-axle; 10-wheel $2.00; Euclid $2.20 [d] intermediate [e] bldg contr; highway $2.075 [f] less than 2-t [g] blade [h] scoop, bldg [i] scoop, road [j] plus $2 pd by employer for hosp, death benefits to family [k] bldg constr; steel constr $3.30 [l] higher rates are union, other taken from min wage scale approved by County Commissioners Court [m] incl 10¢ H&WF [n] flatbed [o] excavating [p] flatbed & hard matls 2½-t [q] over 50 hp [r] blade grader [s] form and subgrade [t] single [u] incl 7½¢ HWF [v] up to 6 cy [w] 6–8 cy [x] cat oper [y] up to 3½ cy [z] 3½ cy & over [aa] applies to local 807 [bb] incl 3% WF, 2% PF, 11 PH [cc] incl 5% WF [dd] up to 5 cy [ee] 5 cy & over

AN EXAMPLE OF PREPAKT'S NEW APPROACH TO CONSTRUCTION PROBLEMS

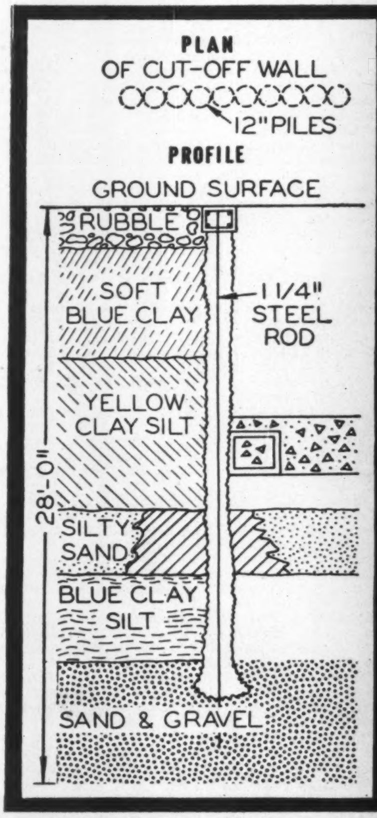
Cast-in-Place Concrete Piles

Cast-in-place Prepakt Concrete piles have distinct advantages over conventional steel or pre-cast concrete piles for many foundation problems. In unstable soils where driving vibrations endanger nearby installations or where headroom is limited, this Prepakt technique is the proved answer.

Cast-in-place piles are made by auguring holes, then filling these with either (1) Intrusion Mortar or (2) coarse aggregate followed by consolidation with Intrusion Mortar. This produces continuous concrete shafts without honeycombing, water pockets or segregation. Lateral penetration of mortar in uncased holes provides greater skin friction and load-carrying capacity. Absence of driving vibrations avoids risk of damage to facilities or collapse of previously placed piles. Costing no more than conventional concrete methods, Prepakt's technique does not require unwatering.

A recent application of cast-in-place piles as cofferdams for additions to an Ohio steel mill is illustrated here.

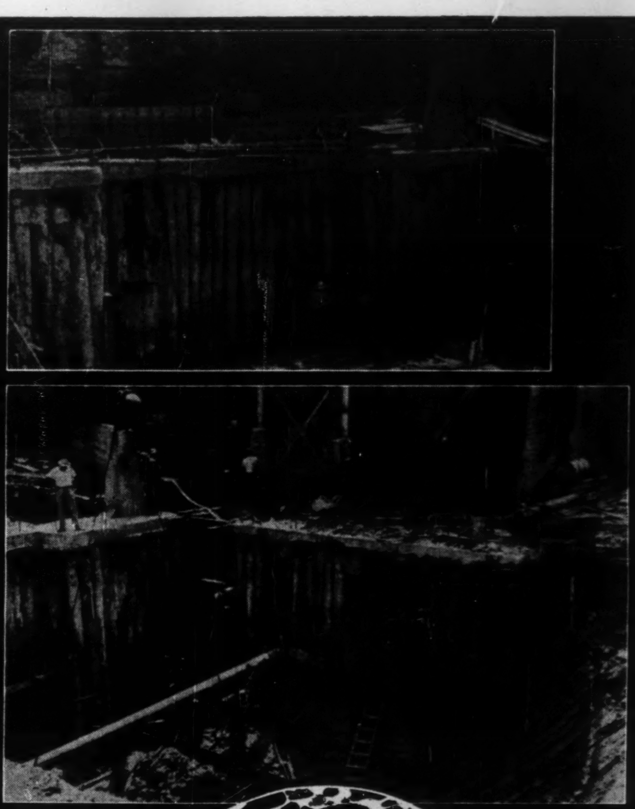
This is added proof that Prepakt's *new approach to concrete construction problems* produces better results at less cost.



Cast-in-place Prepakt Concrete piles were used at an Ohio steel mill as excavation cofferdams for new blower house (top) and skip pit (bottom). Photos taken after excavation show nearby equipment which would have been damaged by shocks from driving sheet piling.

618 piles, 19 to 30 feet deep, were cast-in-place without casings. To overcome unstable soil, Intrusion Mortar was pumped thru hollow auger shaft as it was withdrawn. Diagram (left) shows typical pile and soil composition.

Prepakt piles were left in place as outside form for foundation wall eliminating backfilling. Other Prepakt piles were used as support foundations for blowers.



Have you considered Prepakt's "new approach" for your problem? For further information on other applications, write on your letterhead to: Intrusion-Prepakt, Incorporated, Room 779-V, Union Commerce Building, Cleveland.

CHICAGO • ATLANTA • SEATTLE • NEW YORK
PHILADELPHIA • SAN FRANCISCO • KANSAS CITY

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CONTRACTORS PREPAKT **ENGINEERS**

INTRUSION-PREPAKT, INC.
THE PREPAKT CONCRETE CO.

MAIN OFFICE: CLEVELAND 14, OHIO
CANADIAN OFFICE: TORONTO, ONTARIO

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

MASSACHUSETTS — BA 1/11 — Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Palmer-Brimfield—Contr. 51-051 Quaboag Valley Bridge. $800,000. Plans deposit $25. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, consult. engrs. Charles T. Main, Inc., 80 Federal St., Boston, sect. engr. CD 8/11.

▲ **MASSACHUSETTS**—BA 1/13—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Chicopee—Contr. 51-190 hy. and bridge constr. $1,800,000. Plans deposit $50. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, engrs. CD 8/11.

BIDS ASKED—BUILDINGS

▲ **Mass., Norwood**—MANUFACTURING AND OFFICE—BA 1/14—Mason-Neilan Regulator Co., 1190 Adams St., Dorchester, mfg. and office bldg., Nahatan St. and Providence Hy. $1,000,000. Harry J. Korslund, 506 Washington St., archt. CD 9/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Charles Capone Constr. Co., Inc., 850A Boston, Providence Hy., Dedham, Mass. CA **$1,641,198**, est. $2,300,000. hy. and bridge constr. Southern Circumferential Hy., Rte. 128, U-299 (8), Dedham and Westwood. CD 12/2, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Edwin Moss & Son, Inc.**, 555 Grant St., Bridgeport, Conn. CA Approx. **$6,000,000.** Casting FOUNDRY adjacent to present property, FAIRFIELD, CONN. J. W. Bullard Mfg. Co., 1342 Kings Hy., Cut off, Fairfield, Conn. CD 11/24.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **Pa., Allentown**—SCHOOL—BA 1/12—Allentown School Dist., 31 S. Penn St., Hiram W. Dodd Elementary School. $1,000,000. Wolf & Hahn, 459 Hamilton St., archts. CD 10/27.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Slattery Rock Corp., 46-36 54 Rd., Maspeth, N. Y. CA **$2,248,000**, est. $2,620,000, 7.20 Exp. (1.28 Acc) mi. Major Deegan Expressway (Cont. No. 9), FAMDE 54-6, Bronx Co. Bids Nov. 18. CD 11/23, under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Tully & DiNapoli, Inc., 127-50 Northern Blvd., Corona, N. Y., LB **$1,887,708**, est. $2,626,000. Horace Harding Ex. Sect. II (Cont. No. 3A), (0.40 Acc.) 0.53 mi. FAHHE. 54-1, Queens Co. Bids Dec. 23. CD 12/2.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Walsh Constr. Co., 122 E. 42 St., New York 17, N. Y. LB **$6,491,760**, est. $7,639,000, New York State Thruway-Niagara Sect.-Sub. N4 (Court St. to Main St.); Fuhrmann Blvd. Interchange (0.69 Acc.) 0.82 mi. FANTC. 54-2, Erie Co.;
Rusciano & Son Corp. & Del Balso Constr. Corp., 50 Mt. Tom Rd., Pelham Manor, N. Y., LB **$3,288,303**, est. $3,904,000, New York State Thruway-New England Sect. Sub. 6 (Cont. 2) (6.50 Acc.) 2.9 mi. FANETC 54-13P, Bronx Co.;
Savin Constr. Corp., 10 Village St., East Hartford, Conn., LB **$1,635,920**, est. $2,326,000, City of Syracuse: State Fair Blvd., Lake Onondago West Shore Development, Northwest Arterial Connection (Cont. 1), (0.39 Acc.) 1.3 mi., FAC 54-16, FGSH 54-17, Onondaga Co.; LB **$3,666,064**, est. $4,460,000, Binghamton City: Vestal Ave. Bypass, FAC. 49-8, Binghamton City: Court St.-Rte. 17 Connection Susquehanna River Bridge 2.28 Acc. 0.91 mi. FARC. 54-108, FAC 54-17, Broome Co.;
Yonkers Contg. Co., Inc., 969 Midland Ave., Yonkers, N. Y., LB **$5,057,208**, est. $6,485,000, New York State Thruway-New England Sect. Sub. 4 (Mamaroneck Ave.-Central Ave.) 2.37 Acc. 2.84 mi., FANETC. 54-10, FANET. 54-11, Westchester Co.;
Hudson River Constr. Co., Inc., 75 State St., Albany N. Y., LB **$177,348**, est. $205,000, Nicholville-Dickinson, Pt. 2, SH 9265, Dickinson-West Bangor, Pt 2, SH 9076, Malone-Dickinson, Pt. 2, SH 1383, 0.99 mi. FARC. 54-107, Franklin Co.;
John Arborio, Inc., W. Cedar St., Poughkeepsie, N. Y. LB **$1,428,956**, est. $1,658,000, New York City Board of Water Supply (Pepacton Reservoir) Rds. 3, 3D, 10, 10A and 10AT, 7.34 mi. Cont. 54BWS3, 3D, 10, 10A, 10AT, Delaware Co. Bids Dec. 23. CD 12/2.

▲ **Edenwald Contr. Co. & Anthony Grace & Sons, Inc.**, 151-45 6th Rd., Whitestone, N. Y., CA **$1,344,418**, paving, utilities, and piles for Hangar No. 9, New York International Airport, Contr. NYA-430.002, IDLEWILD, N. Y. The Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Dec. 14. CD 12/16, under LB.

▲ **NEW JERSEY-PENNSYLVANIA**—Delaware River Port Auth., Administration Bldg., Camden, N. J.
Bethlehem Steel Co., E. 3 St., Bethlehem, Pa., CA **$3,347,345**, Construct G-2, superstructure for approaches from Gloucester Anchorage to Newton Creek. Bids Nov. 10. CD 11/12, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Eichleay Corp., 33 S. 19 St., Pittsburgh, Pa., LB **$1,586,592.** superstructures for viaducts on Penn-Lincoln Parkway and portions of ramp work, Pittsburgh, Allegheny Co.; -
Conn Welding & Machine Co., 108 S. Corton Ave., New Castle, Pa., LB **$142,041**, alterations and repairs to bridge carrying Rte. 6 over Susquehanna River, Wysox Twp., Bradford Co. Bids Dec. 21. CD 11/30, 12/6.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
J. Richard Nissley, Landisville, Pa., CA **$2,458,913**, four plate girder bridges, one under Reading R.R., one over Schuylkill River, one under Reading Belt Line, one which is a grade separation; and one over Pennsylvania R.R. and Reading R.R., crushed aggregate base with bit. surf. variable to 48 ft. wide for temporary runaround; rein.-con. pavement variable 46 to 48 ft. wide, reconstr. cement concrete divisor 2-ft. wide, 1.14 mi. T.R. 222, City of Reading, Bern and Muhlenberg Twps., Berks Co. Bids Nov. 19. CD 11/24, under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
Lycoming Constr. Co., Inc., 127 Susquehanna St., Williamsport 19, Pa., CA **$3,068,363**, constr. 6.62 mi. (Sec. 37-E) Northeastern Exten. in Bear Creek and Dennison Twps., Luzerne Co. Bids Dec. 1. CD 12/3, under LB.

▲ **Harry C. Erb, Inc.**, 29 Bala Ave., Bala, Pa. CA **$1,739,450.** Frankford Creek Flood Control Proj. incl. dredging, bridges and roadways, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Nov. 23. CD 12/1, under LB.

▲ **Hughes-Foulkrod Co.**, 809 Schaff Bldg., Phila., Pa. CA **$1,114,557**, Bid 2289, Contr. SD-129-SE, general constr. work, furnishing, installing mechanical equipment and piping for screen, administration, garage and machine shop bldg., grit chambers and appurtenant work at Southeast Treatment Works, Packer Ave. and Swanson St., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Dec. 16. CD 11/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Walsh Constr. Co.**, 122 E. 42 St., New York 17, N. Y. CA Approx. **$2,000,000.** 2 story STORE BLDG. addn. to Levittown Shopping Center to be occupied by Mays Department Store, LEVITTOWN, N. Y. Berger-Tilles Projects, 64 Division Ave., Levittown, N. Y. CD 7/13.

▲ **Nedmac Corp.**, c/o Terminal Constr. Co., State Hy. Rte. 17, Woodbridge, N. J., Separate Contracts. Approx. **$3,000,000.** PARKING GARAGE and OFFICES incl. STORES, CAMDEN, N. J. Ziegler, Childs & Paulsen, 921 Bergen Ave., Jersey City, N. J., archts.

▲ **Mel Win Constr. Co.**, 117 N. 10 St., Phila., Pa. Separate Contracts. **$2,500,000.** RESIDENTIAL DEVELOPMENT, Acres Dr., FOLSOM, PA.
Brookwater Park Development Co., 6722 N. Broad St., Phila., Pa., Separate Contracts. **$937,500**, RESIDENTIAL DEVELOPMENT, Brookwater Rd., GRATERSFORD, PA.

▲ **Ritter Brothers**, 1511 N. Cameron St., Harrisburg, Pa., CA **$3,964,600**, general constr.;
Howard P. Foley Co., 31st and Revere Sts., Harrisburg, Pa., CA **$674,000**, electrical work for 11 story Commonwealth OFFICE BLDG., HARRISBURG, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa., Bids Dec. 15. CD 12/17, under LB.

▲ **McGarry & Cella**, 5012 Fairway Rd., Drexel Hill, Pa. Separate Contracts. **$1,000,000.** RESIDENTIAL DEVELOPMENT, Bishop Hollow Rd., NEWTON SQUARE, PA.

▲ **Wark & Co.**, 1920 Sansom St., Phila., Pa., CA **$1,500,000.** 2 story, brick, 87,000 sq. ft. GARAGE BLDG. and SERVICE OFFICE, parking area for 280 cars, NORRISTOWN, PA. Phila. Electric Co., 9th and Sansom Sts., Phila., Pa. N. C. McHugh, c/o owner, ch. engr.

▲ **Baton Constr. Co.**, 1717 Sansom St., Phila., Pa. CA **$4,000,000.** 1 story, brick, 250,000 sq. ft. MFG. PLANT, NORTH WALES, PA. Leeds & Northrup Co., 4901 Stenton Ave., Phila., Pa. Bids Dec. 1. CD 12/1.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. CA **$3,287,000.** general contract HIGH SCHOOL, athletic field and parking area, PHILA., PA. Bd. Educ., 21st and Winter Sts., Phila., Pa. Bids Dec. 2. CD 12/9, under LB.

▲ **Navarro Corp.**, 6219 Broad St., Pittsburgh, Pa., LB **$4,183,000**, general constr.;
Limbach Co., 521 Pressley St., Pittsburgh, Pa., LB **$506,990**, air conditioning and ventilation;
E. C. Ernst, Inc., 725 Campania Ave., Pittsburgh, Pa. LB **$548,719**, electrical constr.;
Otis Elevator Co., Oliver Bldg., Phila., Pa., LB **$469,403**, elevators for STATE OFFICE BLDG., at Gateway Center, PITTSBURGH, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Dec. 22.

▲ **Valley Forge Homes, Inc.**, 107 N. Aberdeen Ave., Wayne, Pa., Separate Contracts. **$4,000,000.** RESIDENTIAL DEVELOPMENT, Germantown Pike, PLYMOUTH MEETING, PA.

▲ **Schneider & Davis**, 2040 Manantongo St., Pottsville, Pa., CA **$1,250,000.** HIGH SCHOOL, POTTSVILLE, PA. Roman Catholic Archdiocese of Phila., 310 N. 19 St., Phila., Pa. Bids Nov. 2. CD 12/1.

▲ **George Coopersmith**, Phillipsburg, N. J., CA **$866,166.** Community SENIOR HIGH SCHOOL, QUAKERTOWN, PA. Quakertown Area Joint School Auth., Quakertown, Pa. Bids Nov. 16. CD 11/24, under LB.

▲ **Penn Valley Constructors**, 20 N. Pennsylvania Ave., Morrisville, Pa. Separate Contracts. **$1,500,000.** RESIDENTIAL DEVELOPMENT, Manor Lane South, YARDLEY, PA.

SOUTH

BIDS ASKED—BUILDINGS

▲ **Va., Danville**—HIGH SCHOOL—BA 1/11—City, Municipal Bldg., High School, Beverstone Park. $2,000,000. Extended date. Thompson & Ragland, 611 Masonic Bldg., archts. CD 11/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **VIRGINIA**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington,
Nello L. Teer Co., Trust Bldg., P. O. Box 1131, Durham, N. C., LB **$877,490**, Proj. ID5-131, paving Colonial Parkway, James City Co. Bids Dec. 21. CD 11/23.

▲ **WEST VIRGINIA**—State Road Comn., 1800 Washington St., E., Charleston,
John F. Beasley Constr. Co., 20 N. Wacker Dr., Chicago, Ill., LB **$1,066,000**, Bridge No. 1899. superstructure,

(Continued on page 64)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a suuplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

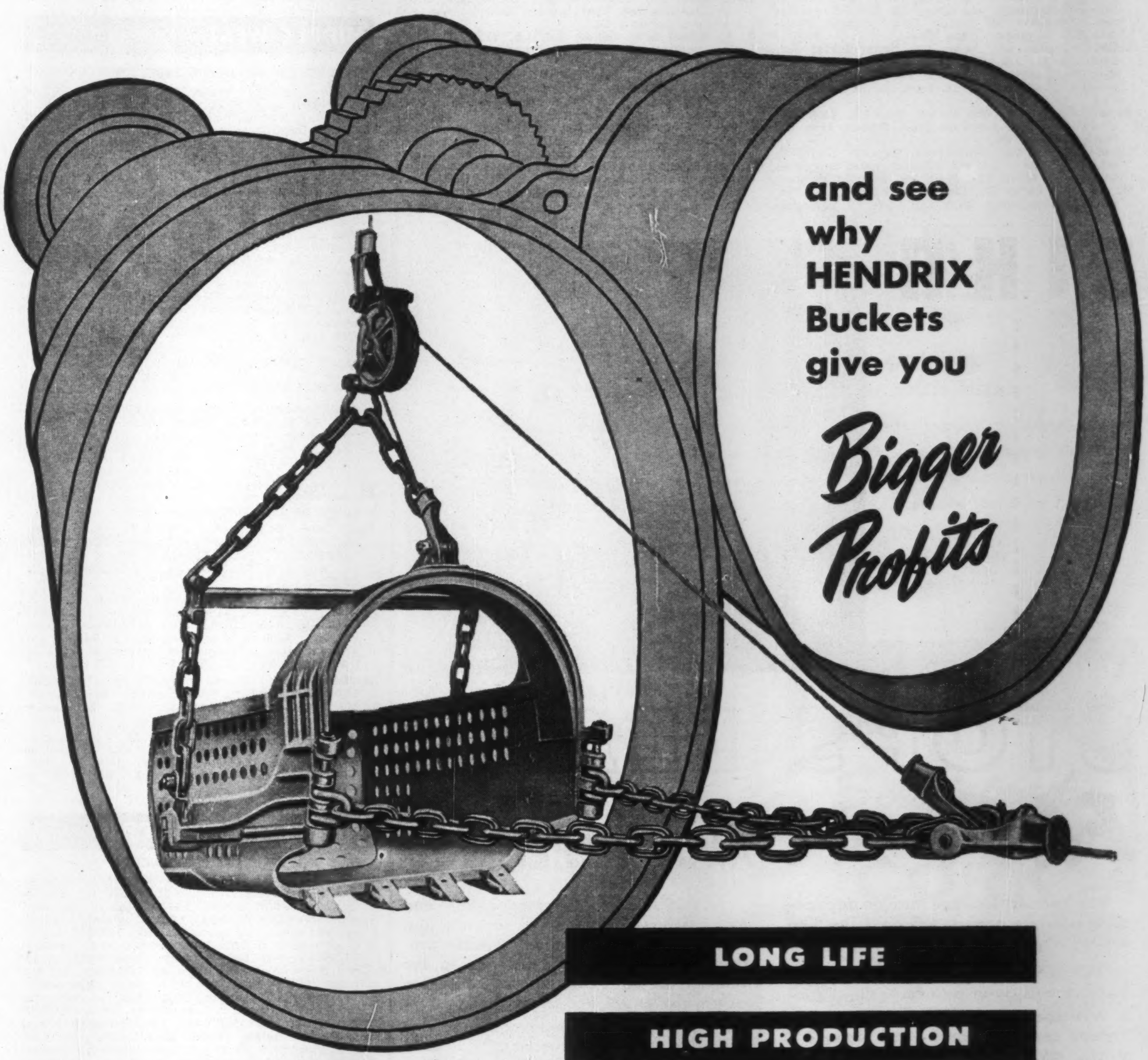
CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

take a *closer* look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HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

(Continued from page 62)

over Kanawah River and New York Central R.R. with ramps, approaches, Montgomery, F-283 (9), Fayette and Kanawah Counties. Bids Dec. 14. CD 12/3.

▲† **Brown Coble Constr. Co.**, Lexington, N. C., CA **$2,707,598**, grading, drainage, paving and appurtenances for aprons, taxiways, runways, exten. and overlay at Myrtle Beach Air Force Base, No. 38-081-55-16, MYRTLE BEACH, S. C. U. S. Eng., Custom House, Charleston, S. C. Bids Dec. 14. CD 12/20, under LB.

▲ **GEORGIA**—State Hy. Dpt., Atlanta,

J. Nick Jordan, 716 Parkway Dr. N. E., Atlanta, Ga., LB **$79,099**, overhead bridge on Central of Georgia R. R. between Monticello and Gray; LB **$84,205**, bridge over Waterworks and Pearson Creeks between Monticello and Mansfield, Jasper Co.;

Ledbetter-Johnson Co., Rome, and **Henry Newton Co.**, Decatur, Ga., LB, **$1,084,917**, bridge over Etowah River and Southern Ry. and 1.137 mi. paved approaches on relocation of Ga. 1 and 101 in Rome, Floyd Co.;

Holland Constr. Co., Mt. Vernon, Ga., LB, **$155,016**, bridge over Little Hurricane Creek between Alma and Pearson, Bacon Co.;

Cherokee Constr. Co., Hawkinsville, Ga., LB, **$110,580**, bridge at Briar Creek and 0.31 mi. paved approaches on Ga. 4-x Wrens Rd., Burks and Jefferson Counties;

M. J. Carroll Contg. Co., Leesburg, Fla., LB, **$574,496**, bridge at Echeconnee Creek and 4.646 mi. paved approaches on Perry-Macon Rd., Houston and Bibb Counties;

W. L. Cobb Constr. Co., Decatur, Ga., LB, **$103,847** bridge over Mill Creek between Dalton and Ringgold, Whitfield Co.;

W. L. Robinson Constr. Co., College Park, Ga., LB, **$365,160** bridges over Ten Mile Creek, Five Mile Creek and Alapaha River between Nashville and Lanier-Clinch County line, Berrien and Lanier Counties;

A. M. Tuck, Greenwood, S. C., LB, **$153,633** bridge Ogeechee River on post road from U. S. 17 to Herndon, Jenkins Co.;

Scott Constr. Co., Thomasville, Ga., LB, **$668,849** bridge over Chattahoochee River between Donaldsonville and Marianna, Seminole Co.;

D. A. Hudson Sons, Bolton, Ga., LB, **$75,860** bridges over Ogeechee River on Crawfordville-Sparta Rd., Tallaferro Co.

▲ **GEORGIA**—State Hy. Dpt., Atlanta,

MacDougald Constr. Co., 1625 Northside Dr. N.W., Atlanta, Ga., LB, **$1,294,146**, 0.413 mi. grading, paving, 5 underpasses, Atlanta North-South Expressway, UI-536 (2-11), Fulton Co.; LB **$1,880,253** grading, paving 2 bridges, 2 underpasses 1.343 mi. Atlanta North-South Expressway UI-536 (2-12) Fulton Co.;

Lothridge Bros., Gainesville, Ga., LB, **$155,818**, 7.361 mi. grading, base, surf. on La Grange Ga. to Roanoke Ala. Rd. SR 109, S 0740 (1), Troup Co.

Henry Bickel Co., 1020 E. Chestnut St., Louisville, Ky. CA **$818,287**. Upper Dry Run Sect. C Dry Run Sewer, 2,400 ft. 12x19 ft., LOUISVILLE, KY. Metropolitan Sewer Dist., 414 W. Jefferson St., Louisville, Ky. Bids Dec. 17, awarded Dec. 22. CD 12/21, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **F. N. Thompson, Inc.**, Lawyers Bldg., Raleigh, N. C. CA **$1,989,000**. HOSPITAL addn., DURHAM, N. C. Duke University, Durham, N. C. Bids Nov. 10. CD 11/18, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

INDIANA—BA 1/19—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis, Zone 4,

Contract C-1, grading, drainage, structures, paving approx. 2.7 mi. Construction Section C-1 of Indiana East-West Toll Road beginning at point about 700 ft. east of Indiana State Line at Toll Road Centerline Station 244 plus 98.47 in Lake Co. and extending southerly to point about 500 ft. south of Wolf Lake at Toll Road Centerline Station 386 plus 00 in Lake Co.

Contract C-2, grading, drainage, structures, paving approx. 2.1 mi. Construction Section C-2, of Indiana East-West Toll Road beginning at point about 500 ft. south of Wolf Lake at Toll Road Centerline Station 386 plus 00 in Lake Co. and extending southerly to point about 700 ft. east of Calumet Ave. at Toll Road Centerline Station 497 plus 30.43 in Lake Co. Plans deposit $5 standard specifications for Indiana East-West Toll Road; $25 for Plans, special provisions and proposal forms, per set, per construction section; adv. ENR 1/6. CD 2/10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Krall Contractors**, Decatur and **J. L. Porter Co.**, Maywood, CA **$1,044,000**. sewage treatment plant, pumping station, intercepting sewers, STREATOR, ILL. City, City Hall, Streator, Ill. Bids Nov. 15, awarded Dec. 20. CD 11/9.

BUILDINGS

LOW BIDS AND CONTRACTS

Inman Constr. Co., 2900 W. Jefferson St., Louisville, Ky., CA **$974,700**. Junior and Senior HIGH SCHOOL, CLARKSVILLE, IND. Clarksville School Bldg. Co., Inc., Clarksville, Ind. Bids Dec. 21, awarded Dec. 22. CD 12/7.

▲† **J. D. Hedin Constr. Co.**, 2900 Newton St. S.E., Wash., D. C., LB **$1,989,000** 170-bed NEUROPSYCHIATRIC ADMISSIONS and TREATMENT BLDG., Veterans Administration Hospital, MARION, IND. Veternas Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C. Bids Dec. 21. CD 11/4.

▲ **Nelson & Co.**, Racine, Wis., CA Est. **$3,000,000**. SHOPPING CENTER, RACINE, WIS. Durando, Inc., 306 5 St., Racine, Wis. Bids Sept. 27, awarded Dec. 17. CD 9/14.

R. C. Hendrick & Son, 427 Atwater St., Saginaw, Mich. LB **$739,639**. Intermediate SCHOOL, Norman and North 20 Sts., SAGINAW, MICH. City, Bd. Educ., 544 Millard St., Saginaw, Mich. Bids Dec. 14. CD 11/22.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Tex., Kelly Air Force Base**—BA 2/9—U. S. Eng., Box 1229 Galveston, 11,500 ft. x 300 ft., 385,000 sq. yd pavement runway; 107,000 sq. yd. new taxiway; strengthen taxiway, 53,000 sq. yd.; 251,000 sq. yd. aprons and warm-up pads; 188,000 sq. yd. 2 in. b. conc. on 13 in. base material paved shoulders; 11,550 lin. ft. high intensity runway lighting; 235 mi. 2-lane road, flexible base; 7,500 lin. ft. pipe from 18 in. diam. to 72 in. diam. box culvert, 5,000 cu. yd. concrete; 50,000 cu. yd. excavation ditches, 50,000 cu. yd. excavation inlets, headwalls and bridge repair; clearing and grubbing 9-acres, relocate 2 bldgs., remove storm drains and utility lines, remove bldg. foundations, concrete pavement, asph. pavement and drainage structures, constr. new 8,000 lin. ft. chain fence; relocate and encase utility lines; relocate electric power lines under airfield; relocate telephone lines under airfield, Inv. No. No. ENG-41-243-55-33. $12,000,000. Extended date. CD 12/22.

BIDS ASKED—BUILDINGS

▲ **Tex., Galveston**—HOTEL—BA 2/12—The Beach Corp., c/o Miramar Hotel, Seawall Blvd., 100-room hotel. $1,000,000. CD 12/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

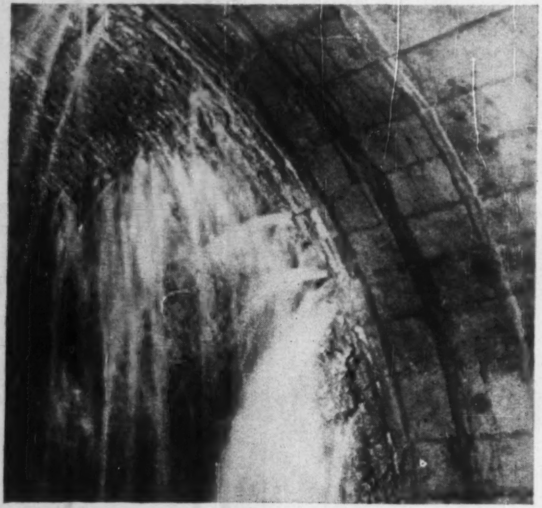
▲ **TEXAS**—State Hy. Comm., Austin,

Gulf Bitulithic Co. & F. M. Reeves & Sons of Austin, P.O. Box 2572, Houston, Tex., CA **$1,063,490**. 1.534 mi. Hy. US 59, Proj. F 514 (16), Harris Co. Bids Dec. 14, awarded Dec. 17. CD 12/17 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Westlake Constr. Co., 1919 Railway Exchange Bldg., St. Louis 1, Mo. CA Est. **$750,000**. brick, concrete, steel 532,234 cu. ft. BLDG. "D", 434,965 cu. ft. BLDG.



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"E" in Northland SHOPPING CENTER, West Florissant Ave. and Lucas and Hunt Rd., JENNINGS (ST. LOUIS 20 P.O.), MO. Northland Shopping Center, Inc., Railway Exchange Bldg., 611 Olive St., St. Louis 1, Mo. CD 7/15/52.

▲ **R. P. Farnsworth & Co., Inc.**, Box 850 and 1515 S. Salcedo St., New Orleans, La., CA **$4,011,000**, general constr. 3 story AUDITORIUM, Akard St. between Masonic and Canton Sts., DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Bids Dec. 17. CD 12/23, under LB.

Thomas Bate & Sons, 1107 Girard St., Houston, Tex. CA **$755,000**, 4 story OFFICE, foundation for 12 story, HOUSTON, TEX. Wilson-Brazoria Corp., c/o Eugene Wilson, Shell Bldg., Houston, Tex. CD 12/22.

Harwell & Harwell, 244 E. Lawndale Dr., San Antonio, Tex., CA **$934,740**. 4 story, bsmnt., 100-bed, steel, brick, stone County HOSPITAL, VICTORIA, TEX. Victoria Co., Court House, Victoria, Tex. Bids Dec. 16. CD 12/22, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Calif., Los Angeles**—MAINTENANCE FACILITIES—BA 1/18—American Airlines, Inc., 80 E. 42 St., New York, N. Y., maintenance facilities at Los Angeles International Airport, $3,000,000, Quinton Engineers Ltd., 812 S. Eighth St., Los Angeles, engrs.

▲ **Calif., San Jose**—BA 2/14—City, City Hall, sewage treatment plant, $2,500,000. Brown & Caldwell, 66 Mint St., San Francisco, engrs. CD 12/8.

BIDS ASKED—BUILDINGS

▲ **Calif., San Francisco**—HOUSING—BA 1/19—Housing Auth. of City of San Francisco, 440 Turk St., Harbor Slope Housing, consisting of 226-units in 37 buildings. $2,000,000. Plans deposit $100. CD 1/7.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Wheelwright Constr. Co.**, Ogden, Utah, LB **$819,611**, est. $827,605, earthwork, concrete pipe lines, structures for equalizing and wasteway reservoir and Weber Aqueduct, Spec. DC 4285, Weber Basin Proj., Davis and Weber Counties, UTAH. Bureau Reclamation, Dpt. Interior, Ogden, Utah. Bids Dec. 15. CD 11/4.

▲† **C. J. Montag & Sons**, 7805 N. E. Halsey St., Portland, Ore., **Carl M. Halvorson**, 10626 S. W. Packing Hy., Portland, Ore., **Cascade Contractors**, 1300 W. Nickerson St., Seattle, Wash., and **Austin Co.**, 2930 4th St. S., Seattle, Wash., CA, **$12,661,246**, est. $13,523,851, non-overflow dam, The Dalles Dam, Wasco Co., CIVENG-35-026-55-70, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Dec. 15. CD 12/17, under LB.

▲† **Peter Kiewit Sons' Co. and Fredericksen & Kasler**, 345 Kieways Ave., Arcadia, Calif., LB **$5,209,736**, const. Airfield Pavement No. 2, ENG-04-353-55-60, Edwards Air Force Base, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Bids Dec. 22. CD 12/7.

BUILDINGS

LOW BIDS AND CONTRACTS

G. E. Teufel Co., Henry Bldg., Seattle 1, Wash. LB **$869,600**. 5 rein.-con. bldgs. totaling 106,000 sq. ft., for Lakewood Junior-Senior High SCHOOL, 10 Ave. N.W. and S.W. 116 St. with low-pressure steam heating, SEATTLE, WASH. Highline School Dist., 401, 253 S. 152 St., Seattle, Wash. Bids Dec. 21. CD 11/29.

▲ **California Builders Co., Inc.**, 5525 Marshall St., Oakland, Calif., LB, **$1,079,900**, Ambrose High SCHOOL, near West Pittsburg, CONCORD, CALIF. Mount Diablo Unified School Dist., Concord, Calif. Bids Dec. 14. CD 12/1.

▲ **Macvo, Inc.**, 2208 Beverly Blvd., Los Angeles, Calif. CA **$1,049,000**. 150 frame, stucco DWELLINGS, Alford, Arnstead and Citress Sts., GLENDORA, CALIF. Marchmont Homes, Inc., 2208 Beverly Blvd., Los Angeles, Calif. Ed H. Fickett, 5657 Wilshire Blvd., Los Angeles, Calif., archt.

H. K. Ferguson Co., 55 New Montgomery St., San Francisco, Calif. CA, **$750,000**. design and construct EXECUTIVE BLDGS., etc., ORINDA, CALIF. Pacific Intermountain Express Co., 299 Adeline St., Oakland, Calif.

▲ **City of Oxnard**, City Hall and **Ventura Co.**, 501 Poli St., Oxnard, Calif. cancelled bids to have been opened Jan. 18, city county office bldg., OXNARD, CALIF. Est. **$1,000,000**. CD 12/21.

▲ **McDonald Bros.**, 2620 Rosemead Blvd., El Monte, Calif. CA **$1,010,000**. 113 frame stucco DWELLINGS on Fairgrove, Colwick and Rygate Sts., PUENTE, CALIF. Barstow Manor, Box 111, El Monte, Calif. Ed H. Fickett, 5657 Wilshire Blvd., Los Angeles, Calif., archt.

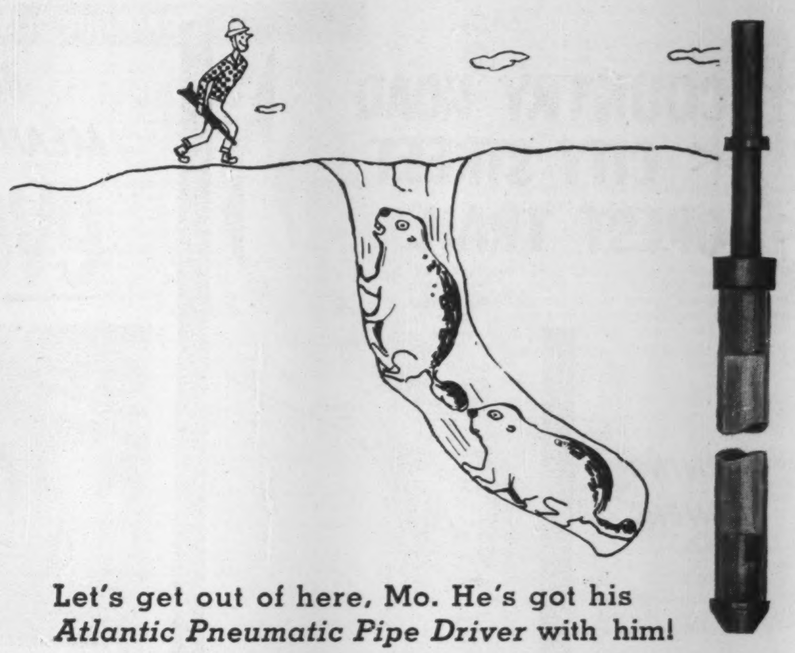
▲ **H. K. Ferguson Co.**, 411 W. 5 St., Los Angeles, Calif., CA Est. **$8,000,000**, isophthalic PLANT at Richmond refinery, RICHMOND, CALIF. Standard Oil Co. of California, 225 Bush St., San Francisco, Calif. Awarded Nov. 17. CD 11/11.

CANADA

BIDS ASKED—BUILDINGS

▲ **Que., Montreal**—PLANT—BA 1/18—Christe Brown & Co. Ltd., 200 Lake Shore Rd., Toronto, Ont., baking plant at Viau St. and Ray Muphy Ave.

(Continued on page 67)



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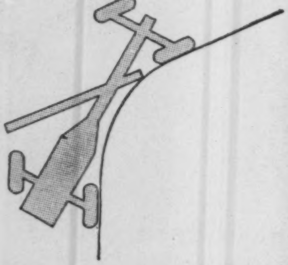
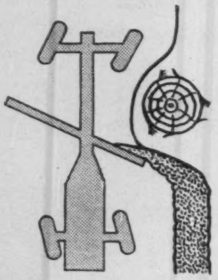


DODGING OBSTRUCTIONS



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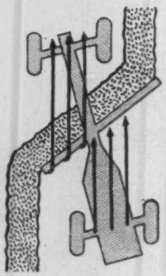

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(Continued from page 65)

$4,000,000. Surveyor, Menninger & Chevert, 1440 St. Catherine St. W., engrs. CD 11/16.

▲ **Ont., Petawawa**—BARRACK—BA 1/25—Defence Constr. Ltd., 56 Lyon St., Ottawa, 2 barrack blocks, mess and inside services at Army Station. $2,500,000. Plans deposit $100. CD 12/15.

SOON LETS CONTRACT—BUILDINGS

▲ **Ont., Ottawa** — DEPARTMENT STORE — Simpson-Sears Ltd, 176 Yonge St., Toronto, soon lets contract superstructure for department store, Carling Ave. $1,700,000. Abra & Balharrie, 55 Metcalf St., archts.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Poole Constr. Co. Ltd.**, 10503 109 St., Edmonton, Alta., CA **$8,000,000**, steam generated power development at Wabamum Village, 40 mi. west of Edmonton, ALBERTA, Calgary Power Ltd., 140 First Ave. W., Calgary, Alta. Montreal Eng. Co. Ltd., 244 St. James St. West, Montreal, Que., engrs. Awarded Dec. 13. CD 9/20, under CA.

▲ **Swanson Constr. Co. Ltd.**, 1361 Erin St., Winnipeg, Man. CA **$1,113,063.** 50-40 vehicle GARAGES, RADAR MAINTENANCE BLDG., GUN DRILL HALL, SERVICE STATION, roadwork, sewer and water services, at air base, WINNIPEG, MAN. Defence Constr. (1951), Ltd., 56 Lyon St., Ottawa, Ont. Bids Dec. 7, awarded Dec. 20. CD 11/11.

▲ **J. L. E. Price & Co. Ltd.**, 4 Collier St., Toronto, Ont. CA **$1,500,000.** 2 story HOSPITAL, 1 story POWER HOUSE, two 1 story NURSES' WINGS, steel, frame, brick walls, Hy. 27 and Queen Elizabeth Way, TORONTO, ONT. Queensway General Hospital Assn., R. S. McCreath, secy., 15 King St. W., Toronto, Ont. Bids Dec. 10. CD 11/30.

▲ **Pigott Constr. Co. Ltd.**, 1250 Bay St., Toronto, Ont. CA Est. **$8,000,000.** 19 story OFFICE, St. Clair Ave. W. and Foxbar Rd., TORONTO, ONT. Imperial Oil Ltd., 56 Church St., Toronto, Ont. Bids Nov. 15, awarded Dec. 22. CD 10/28.

ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **M. R. Smith**, Anchorage, Alaska, LB **$1,124,429.** est. $1,094,865, FAMILY QUARTERS, Inv. 55-30, KENAI, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Dec. 20. CD 11/29.

▲† **Nelse Mortensen & Co.**, 1020 Westlake St. North, Seattle, Wash., LB **$1,095,318,** family HOUSING, Inv. 55-30, KENAI, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Dec. 20. CD 12/27, under LB.

Proposed Projects

WATER SUPPLY

▲ **Ill., East St. Louis, Belleville and Granite City**—East St. Louis & Interurban Water Co., S. C. Casteel, genl. mgr., 513 Missouri Ave., modernization and expansion program, incl. 2 storage tanks, 2,500,000 gal. capacity at French Village; about 10,000 ft. 36 in. main from main pumping plant on Front St., East St. Louis, to distr. sys., three pumping units and a new turbo-generator pumping unit at main station, 2 m.g. storage tank in Belleville, and increase 5 m.g.p.d. to filter capacity at Granite City, Ill. plant. **$3,000,000.**

▲ **N. C., Gastonia**—City, voted bonds Dec. 14, WW imprvs., pipe line from S. Fork River, daily capacity 20 m. gals. **$1,500,000.**

Tex., Quitman—Wood Co., Quitman, voted bonds Dec. 11, constr. small lake-dam proj., for town domestic water supply for Winnsboro, **$200,000;** lake-dam proj. for domestic water supply, in northwest sect. of county near Alba and Quitman, **$1,800,000.** CD 11/23.

▲ **Wash., Everett**—City, City Hall, water storage dam on Sultan River with pipe line to city. **$20,000,000.**

SEWERS, WASTE DISPOSAL

▲ **S. C., Charleston**—City, William Morrison, mayor, City Hall, sewer and drain work throughout city. **$1,000,000.** Joseph Needle, city engr. CD 8/11/44.

AIRPORTS

▲† **Mich., Cadillac—JET AIR BASE—U. S.** Eng., 1900 Cadillac Tower, Detroit, plans by Harley, Ellington & Day, Inc., 153 E. Elizabeth St., Detroit, site work at jet air base. Total est. **$8,635,000. (Correction-**engineers). CD 12/20.

▲ **Wash., Seattle**—RUNWAY—Port of Seattle, Bell St. Terminal, Seattle, Zone 4, 1,000 ft. runway extension, Seattle-Tacoma Airport. **$1,000,000.** G. Treadwell, ch. engr. CD 2/19.

▲† **Alaska, Galena**—STATION FACILITIES—U. S. Eng., Anchorage, station facilities at airport. **$1,000,000.**

▲ **N. S., Halifax**—AIRPORT—Dpt. Transport, Hunter Bldg., Ottawa, Ont., airport at Kelly Lake, near here. **$5,000,000.** CD 4/21.

LATIN AMERICA

▲ **Mexico, Reynosa—City, Jesus Ramos Castaneda, mayor,** plans street paving, **$1,900,000.** Jose Megia Delgadillo, city engr.

PUBLIC BUILDINGS

▲ **Calif., Azusa** — SCHOOLS — Gladstone School Dist., 18022 E. Gladstone St., voted **$3,500,000** bonds, new Valleydale School and the Center School addns. CD 7/8.

▲ **Calif., Fullerton**—SCHOOLS—Fullerton Union High School & Junior College District, 340 E. Wilshire Blvd., **$3,300,000** bond election Mar. 1, new high school and junior college addns. CD 5/26/53.

▲ **Calif., Manhattan Beach**—HIGH SCHOOL—South Bay Union High School District, Manhattan Beach, **$3,000,000** bond election Feb. 18, high school.

▲ **Ill., Joliet**—SCHOOLS—Bd. Educ., 153 S. Ottawa St. plans by Kruegel & Wilkins, 4 E. Clinton St., 2 elementary schools (a) McKinley Park School and (b) Forest Park School, **$400,000;** Washington Elementary School, **$450,000;** plans by Childs & Smith, 20 W. Wacker Dr., Chicago, Zone 6, Junior High School, **$1,500,000.**

▲ **Mass., Framingham** — SCHOOL — Town, School Bldg. Comm., Union Ave., plans by Samuel Glaser Assoc., 105 Newbury St., Boston, Senior High School, Walnut St., **$2,500,000.** CD 9/22/53.

▲ **Neb., Beatrice**—SCHOOL—Bd. Educ., Beatrice, voted **$1,000,000** bonds Dec. 14, school constr. CD 11/17.

▲ **Nev., Carson City**—OFFICE—State Dpt. Hys., State Office Bldg., Carson City, highway department headquarters bldg. **$1,150,000.**

▲ **N. J., Bayville**—SCHOOL—Central Regional High School Bd., Bayville, plans by Micklewright & Mountford, 72 Ewing St., Trenton, regional high school. **$1,250,000.**

▲ **N. Y., Mamaroneck**—HIGH SCHOOL—Bd. Educ., Mamaroneck, plans by McCoy & Blair, 4 Chatsworth Ave., Larchmont, Senior High School addn. **$1,500,000.**

▲ **Pa., Canonsburg** — HIGH SCHOOL — Canonsburg-McMillon School Dist., Canonsburg, plans by Kuhn & Newcomer, 470 Washington Rd., Pittsburgh, Senior High School. **$1,000,000.**

▲ **Va., Warwick**—HIGH SCHOOL—City School Bd., T. R. Sanford, supt., 118 W. Main St., plans by Samuel N. Mayo, 1900 W. Broad St., Richmond, Junior High School. **$1,000,000.**

▲ **Wis., Milwaukee**—WAR MEMORIAL—Milwaukee County War Memorial, Inc., 828 N. Broadway, plans by Ero Saarinen & Assocs., ch. archts., Bloomfield Hills, Mich., first section 5 story war memorial **$2,200,000.** Maynard W. Meyer & Assocs., 424 E. Wells St., Zone 2, assoc. archts. Ammann & Whitney, 724 E. Mason St., Zone 4, consult. engrs. CD 10/30/51.

▲ **Wis., West Allis**—SCHOOL—Bd. Educ., 7510 W. National Ave., Zone 14, plans by Lindl-Schutte & Assocs., 808 N. 3 St., Milwaukee, Zone 3, grade school, Wildwood Estates Subdivision. **$1,060,000.**

▲ **Wyo., Cheyenne**—SCHOOLS—Laramie County School District No. 1, 2118 E. Central Ave., voted **$2,500,000** bonds, 4 new elementary schools, complete work on two others, two Junior High School addns. CD 12/13.

▲ **Man., Winnipeg**—CIVIC CENTER—City, City Hall, civic center, incl. 3 new buildings in city hall area. **$10,000,000.** CD 6/3/48.

▲ **Man., Winnipeg**—ARCHBISHOPS BUILDING—University of Manitoba, Fort Garry, plans by Moody & Moore, 295 Broadway Ave., archbishop's bldg. of St. Paul's College from downtown to above. **$1,000,000.** CD 12/31/45.

COMMERCIAL BUILDINGS

▲ **Calif., Torrance—DWELLINGS—Home Savings &** Loan Assoc., 9235 Wilshire Blvd., Los Angeles, plans by Miller, Royer & Kite, 9952 Santa Monica Blvd., Beverly Hills, 157 frame, stucco dwellings, **$1,500,000.**

▲ **Colo., Grand Junction—OFFICE, etc.—Lucien Cullen** & Welborn Foreman, c/o Jared B. Morse, consult. engr.-archt., 1050 Cherokee St., Denver, office, hotel, apartment bldg., community shopping center, swimming pool, housing development. **$7,225,000.** CD 12/13.

▲ **Ill., Chicago**—SCHOOL, etc.—Sisters of St. Francis c/o Gaul & Voosen, archts., 228 E. Superior St., Zone 11, high school and convent, 3901 N. Ridge Ave., **$1,000,000.**

▲ **Mich., Detroit**—HOSPITAL and HOME—Arnold Home, Inc., 18520 W. Seven Mile Rd., Zone 19, hospital and home addns., West Seven Mile Rd. **$1,130,000.**

▲ **Mo., Hickman Mills**—COMMERCIAL CENTER—Russell Arn Hickman Mills, commercial center on 35 acres southeast corner of Blue Ridge Blvd. and Longview Rd. near Ruskin Heights, just south of Kansas City, **$2,000,000.**

▲ **Mo., St. Louis**—APARTMENT—Glick Real Estate Co., Eugene Glick, pres., 107 N. 8 St., 10 story apartment, 4472 Lindell Blvd. **$3,000,000.**

▲ **N. Y., New York**—APARTMENTS, etc.—University Center, Inc., c/o David Moss, 50 Church St., Zone 7, five 14 story apartments, office bldg., stores and garages on area bounded by First and Second Aves., 30 to 33 Sts. **$15,000,000.**

▲ **O., Cleveland**—HOSPITAL—Forest City Hospital Assn., c/o Greater Cleveland Hospital Fund, 1001 Huron Rd., Zone 15, plans by Horn & Rhinehart, 1240 Huron Rd., Zone 15, 5 story, masonry hospital, on site of present Glenville Hospital, 701 Parkwood Dr. **$1,300,000.**

▲ **Ore., Portland**—APARTMENT—Harry Mittleman, 710 S.W. Madison St., will not construct apartment **$5,000,000.** Project abandoned Dougan & Heims, Royal Bldg., and Folger Johnson, 10 N.W. 20 St., archts. CD 11/15.

▲ **Pa., Wynnewood**—APARTMENTS—John W. Merriam, 123 S. Broad St., Phila., plans by George S. Idell, 117 S. 17 St., Phila., two apartments, Wynnewood Rd. **$1,000,000.** CD 8/27.

▲ **Tex., Irving**—SHOPPING CENTER—Mayflower Investment Co., Irving, plans by Wyatt C. Hedrick, consult. engr. and archt., 904 Fort Worth Ave., Dallas, shopping center. **$1,000,000.** CD 2/25, under LB, Carr P. Collins & Assocs., as owners

▲ **Va., Arlington**—MEDICAL WING—Arlington Hospital, 5129 16th St. North, plans by John M. Walton & Assoc., 2049 15th St. North, constr. new 3-floor medical wing, laundry and boiler plant and nurses home at present site. **$1,000,000.** CD 10/21/52.

▲ **Wash., Spokane**—SHOPPING CENTER, etc.—Citizens Realty Co., 814-18 Main St., shopping center and parking bldg. **$1,300,000.**

▲ **Wash., Spokane**—YOUTH CENTER—Spokane Y.M.C.A. W. 827 First St., Spokane, youth center. **$1,000,000.**

▲ **Wash., Walla Walla—HOUSES—R. E. Wainwright,** Walla Walla, 175 houses west of S. 9 St. between Milton-Freewater Hy. and Country Club, **$1,750,000.**

▲ **Wis., Milwaukee**—OFFICE—Geo. Bockl, Inc., 259 E. Wells St., Zone 2, plans by R. Rasche, 783 N. Jefferson St., Zone 2, 7 story office **$2,000,000.**

▲ **Que., Montreal** — OFFICE — Canadian Overseas Telecommunications Corp., 211 St. Sacrament St., plans by A. L. Perry, 1434 St. Catherine St. W., Montreal, 7 story office, Belmont St. **$1,200,000.**

▲ **Que., Montreal North**—HOUSING—Vogue Development Regt. 1178 Philips Pl., plans by S. Gerson, 1178 Philips Ave., housing development in Gouin Blvd. area, **$2,000,000.**

INDUSTRIAL BUILDINGS

▲ **Md., Union Bridge**—PLANT—Lehigh Portland Cement Co., 718 Hamilton St., Allentown, Pa., cement plant addn., expansion. **$15,000,000.**

▲ **Mo., Kansas City**—PLANT—Westinghouse Electric Corp., c/o Allan Chilton, ch. engr., Bannister Rd. and Troost Ave., plant expansion, jet engine production, high and low power laboratories, experimental engine shop. **$12,500,000.** Sanderson & Porter, 52 William St., New York, N. Y., engrs. CD 12/29/53.

▲ **N. Y., Brooklyn**—PALLETIZING, etc.—Joseph Schlitz Brewing Co., c/o Kahn & Jacobs, archts., 2 Park Ave., New York, Zone 16, 2 story palletizing bldg. and beer storage, 105-19 Evergreen Ave. **$1,500,000.** CD 7/31/52.

▲ **O., Wickliffe**—FACTORY, etc.—Oster Mfg. Co., 2057 E. 61 St., Cleveland, 105,000 sq. ft. factory and main office bldg. **$1,000,000.**

▲ **Pa., Pittsburgh**—LABORATORY—Pittsburgh Plate Glass Co., Gateway Center, Pittsburgh, plans by Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago, Ill. glass research laboratory, Lamar Twp. **$1,000,000.**

▲ **Vt., Barre**—PLANT—Rock of Ages Corp., R. S. Gillete, pres., Graniteville, 1 story, 50 ft. high center portion 200x600 ft., granite plant, 11 cranes, concrete block tower, wall railroad siding, truck ports, etc. near Quarry. **$1,000,000.** The Austin Co., 16112 Euclid Ave., Cleveland, O., consult. engr.

▲ **Wash., Longview**—PAPER MILL—R-W Paper Co., c/o Weyerhaeuser Timber Co., Tacoma Bldg., Tacoma, paper mill. Over **$1,000,000.**

▲ **Wash., Longview**—PLANT—Weyerhaeuser Timber Co., Tacoma Bldg., Tacoma, chlorine and caustic soda mfg. plant. Over **$1,000,000.**

▲ **Wash., Seattle**—PLANT—Carnation Co., 400 5 Ave. N. dairy plant. **$1,000,000.**

▲ **Man., Winnipeg**—WAREHOUSE—Marshall-Wells Co. Ltd., Market and Rorie Sts., plans by Moody & Moore, 295 Broadway Ave., 1 story, 240,000 sq. ft., warehouse, Ellice Ave. and Centre St. **$1,500,000.**

▲ **N. S., Inverness**—POWER PLANT—Wentworth N. MacDonald, Sydney, N. S., coal-burning power plant and mechanicalization of 34 in. coal seam at Inverness and a mine at Port Hood. **$3,000,000.**

UNCLASSIFIED

▲ † **Connecticut—AAA FACILITIES—U. S. Eng.,** 857 Commonwealth Ave., Boston, Mass., Special AAA Facilities, 8 sites, 4 batteries, various locations. **$3,000,000.** Fay, Spofford & Thorndike, 11 Beacon St., Boston, Mass., consult. engrs. CD 11/15.

▲ **Okla., Cushing**—ELECTRIC LIGHT SYS., etc.—City bond election Jan. 18, electric light sys. and power plant exten. **$1,500,000.** C. H. Guernsey & Co., 2701 N. Oklahoma St., Oklahoma City, consult. engrs. CD 12/13.

▲ **Washington** — TRANSMISSION LINE — Washington Water Power Co., W 825 Trent St., Spokane, transmission line from Spokane to Waneta plant of Consolidated Mining Co. of Canada, Spokane Co. **$3,652,000.**

▲ **Wis., Whitefish Bay**—TELEVISION STATION—The Hearst Corp., 959 Eighth Ave., New York, N. Y., television station. **$2,500,000.** A. Earl Cullum, Jr., Highland Park Village, Dallas 5, Tex., consult. engr.

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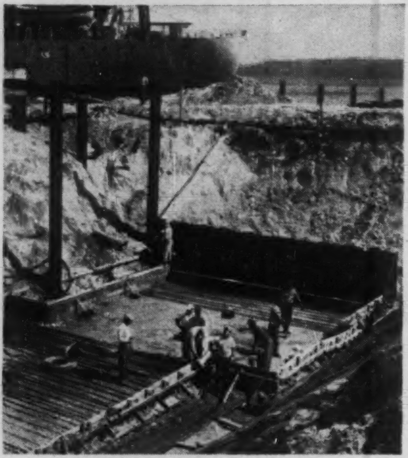

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ **Conn., Fairfield**—SCHOOLS—BA 1/17—Town, School Bldg. Comn., Town Hall, Holland Hill School Highlawn and Jenifer Rds., $705,000; Southport Elementary School, Mill Hill Rd., $450,000. Plans deposit $50, refundable, Lyons & Mather, 211 State St., Bridgeport, archts. CD 9/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **RHODE ISLAND**—State of Rhode Island and Providence Plantations, F. A. Adams, purch. agt., State House, Providence,

M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., LB **$2,207,535**, constr. Contr. No. 1, North-South Freeway, Providence River Bridge, No. 500, Contr. No. 5455, FAP UI-I-03 (3), Providence, Bids Dec. 22.

BUILDINGS

LOW BIDS AND CONTRACTS

E. Turgeon Constr. Co., Inc., 42 Weybosset St., Providence, R. I., CA **$650,000**, TELEPHONE BLDG., Greene St., Washington and Walnut Sts., PROVIDENCE, R. I. New England Telephone & Telegraph Co., 185 Franklin St., Boston, Mass. Bids Dec. 16, awarded Dec. 22. CD 12/7.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
January 11 New Jersey
STREETS AND ROADS
January 12 Delaware

BIDS ASKED—BUILDINGS

Pa., Phila.—DORMITORY—BA 1/12—Phila. Textile Institute, School House Lane and Henry Ave., dormitory, $600,000. George M. Ewing, Western Saving Fund Bldg., archt. CD 12/17.

▲ **D. C., Wash**—SCHOOL—BA 1/25—D. C. Govt., Director Bldg. & Grds., 499 Pennsylvania Ave. N. W., constr. Carger G. Woodson Jr. High School, Minnesota Ave., near Grant St. N. E. $2,500,000. Plans deposit $50.

▲ **Pa., Bellefonte**—HIGH SCHOOL—BA 1/25—Bellefonte Area Joint Schools, Bellefonte, high school, $1,088,000. Buchart Engineering Corp., 611 W. Market St., New York, archts.

▲ **N. Y., New York**—HIGH SCHOOL—BA 1/28—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr. New York School of Printing, W. 49 and W. 50 Sts. between 9th and 10th Aves., Manhattan Boro. $3,554,000. Plans deposit $32. CD 12/18/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,

George M. Brewster & Son, Inc., 275 Fort Lee Rd., Bogota, N. J., CA **$7,945,232**, Contr. N-17, grading, drainage, paving from Brown Pl. to Communipaw Ave., Jersey City, in connection with constr. Newark-Bay-Hudson Co. Exten. of N. J. Turnpike, Hudson Co. Bids Nov. 30, awarded Dec. 9. CD 10/21.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,

Horn Constr. Co., 2174 Hewlett Ave., Merrick, N. Y. LB **$1,183,030**, Contr. N-13, abutments and piers for connecting ramp, etc. for southeast viaduct, extending from Avenue E interchange to vicinity of Brown Pl. in Jersey City, Hudson Co.;

Baldwin-Lima-Hamilton Corp., Eddystone, Pa., LB **$3,576,806**, Contr. N-22, fabrication and erection of superstructure steelwork for East Viaduct, extending from its West Abutment just west of Communipaw Ave. to Pier 1 of West Viaduct north of Grant St. in Jersey City, Hudson Co. Bids Dec. 28. CD 12/2.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Nello L. Teer, Box 1131, Durham, N. C. CA **$1,339,576**. grading, drainage, wid'n., resurf. 4.896 mi. U. S. 13, near Princess Anne, Contr. S 195-2-120, Somerset Co. CD 11/16, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y., CA Est. **$7,500,000**. Research LABORATORY and OFFICE, CORNING, N. Y. Corning Glass Works, Corning, N. Y. Harrison & Abramovitz, 650 5th Ave., New York, N. Y., archts.

▲ **Village Green Homes**, c/o Gale-Oppenheimer, 113 W. Sunrise Hy., Freeport, N. Y. Owner Builds. **$1,400,000**. 127 HOUSES, Nicols Rd., east of Deer Park Ave., DEER PARK, N. Y.

▲ **DiVincenzo & Messina**, c/o Tito DiVincenzo, archt., 135 E. 65 St., New York 21, N. Y. Owner Builds. **$1,000,000**. 132 family APARTMENT, Tibbett and Irwin Aves. at W. 232 St., NEW YORK, N. Y.

▲ **Nason & Cullen**, 6522 Vine St., Phila., Pa., CA **$1,074,295**. Central Y. M. C. A. BUILDING, CHESTER, PA. Young Mens Christian Assn. 7th and Edgmont Sts., Chester, Pa. Bids Dec. 9. CD 12/17, under LB.

Lauter Constr. Co., 112 S. 16 St., Phila., Pa. CA **$800,000**. bottling PLANT, and parking area, PHILA., PA. Pepsi Cola Co., 3 W. 57 St., New York, N. Y. CD 11/23.

▲ **James J. Clearkin**, Wingohocking St., east of Castor Ave., Frankford, Phila. 24, Pa. CA **$1,600,000**. Bishop Neumann HIGH SCHOOL, PHILA., PA. Roman Catholic Archdiocese of Phila., 310 N. 19 St., Phila., Pa. Bids Nov. 3. (**Correction**—contractors name). CD 11/23, under CA.

▲ **Stevens Enterprises**, Lewis Tower Bldg., Phila., Pa., CA **$3,000,000**. APARTMENT, OFFICES, STORES and GARAGES, 21st and Chestnut Sts., PHILA., PA. Matthew K. Stevens, Lewis Tower Bldg., Phila., Pa. George S. Idell, 117 S. 17 St., Phila., Pa., archt.

Albert H. Mollette, Brandywine Hill Rd., and **Charles E. Murphy**, R. D. 4, West Chester, Pa. Separate Contracts. **$750,000**. RESIDENTIAL DEVELOPMENT, Lenape Rd., WEST CHESTER, PA.

▲ **Consolidated Engineering Co., Inc.**, 20 E. Franklin St., Baltimore, Md. CA Total est. **$10,000,000**. 11 to 16 story OFFICE, 309 to 313 N. Charles St. over St. Paul Garage, St. Paul and Saratoga Sts., BALTIMORE, MD. Commercial Credit Co., St. Paul and Saratoga Sts., Baltimore, Md. (**Correction-contractor**). CD 12/13, under CA.

▲ **John A. Johnson & Sons, Inc.**, 303 41 St., Brooklyn, N. Y. LB **$3,165,000**. Cherry Hill HOMES Exten. No. 2 362 units, 2 story, brick, concrete, steel, BALTIMORE, MD. Baltimore Housing Auth., 709 E. Eager St., Baltimore 2, Md. Bids Dec. 22. CD 12/6.

▲ **C. F. Braun & Co.**, 1000 S. Fremont Ave., Alhambra, Calif., CA. Total est. **$75,000,000**. will do some design and will construct (Braun [illegible] prime contractor), OIL REFINERY, DELAWARE CITY, DEL. Tidewater Associated Oil Co., 17 Battery Pl., New York 4, N. Y. M. W. Kellogg Co., 225 Broadway, New York 7, N. Y. designed catalytic cracker; Houdry Process Corp., Box 427, Marcus Hook, Pa., designed reformer; The Ralph M. Parsons Co., 10 E. 40 St., New York 17, N. Y., designed sulphur plant. CD 7/16.

John McShain, Inc., 1501 N. Arlington Ridge Rd., Arlington, Va., LB **$898,200**, COLLEGE BLDG. addns., alterations, WASH., D. C. St. Pauls College, 7th and Hamlin Sts. N. E., Wash., D. C., Gaudreau & Gaudreau, 330 N. Charles St., Baltimore 1, Md., archts.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

▲ **N. C., Raleigh**—BA 2/3—City, W. H. Carper, mgr., City Hall, 12 m. g. sewage treatment plant on Walnut Creek. $2,000,000. Plans deposit $50. Wm. C. Olsen, 5 Exchange Pl., engr. CD 12/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh,

F. A. Triplett, Inc., Chester, S. C., CA **$621,608**. bridge, approaches over Catawba River, 0.72 mi. NC 16 between Charlotte and Lincolnton, Proj. No. 6561, Gaston and Mecklenburg Counties. Bids Dec. 21. CD 12/27, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

Cone Bros. Constr. Co., Box 1301, Tampa, Fla., LB **$99,637** Hillsborough River Bridge and approaches in Temple Terrace, incl. removal existing structure, light excavation; Miami or Ocala rock base; Type 2 surf. tr. const. 424 ft. bridge of Alt. I-beam or prestressed span constr. on steel pile bents, etc. 0.205 mi. State Rd. No. S-580, State Proj. Job No. 1072-150, Hillsborough Co.;

George G. Tapper Co., Port St. Joe, Fla., LB **$113,319**, removal existing structure, heavy excav., sand-clay base; Type 2 bit. surf. tr.; small drainage structures 6.28 1 mi. State Rd. 279, State Proj. Job No. 6111-101, Washington Co.;

Industrial Constr. Co., Box 2797, Jacksonville, Fla., LB **$979,986**, Dania Beach Bridge and approaches, incl. Maint. of traffic; constr. and maint. of detour; Miami Rock base with bit. surf. tr., Type 1-A and b. conc. surf. course, Type I; 495 ft. bridge of concrete and steel approach spans on alternate precast reinforced or prestressed concrete piling, double leaf bascule span and control house; concrete storm sewers; concrete curb and gutter 0.5 mi. State Rd. No. A-1-A, FAP No. U-039-1 (1), Job. No. 8603-201, Broward Co. Bids Dec. 21. CD 12/13.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

Cone Bros. Constr. Co., Box 1301, Tampa, Fla., LB **$146,585**. limerock base, Type 2 surf. tr. 0.75 mi. State Rd. S-542, State Proj. Job. No. 1666-150 Polk Co.;

James H. Craggs Constr. Co., Ocala, Fla., LB **$637,152**, Ocala rock base, Type I b. conc. surf. course with binder, storm sewers, curb and gutter 2.562 mi. State Rds. Nos. 15 and 600, State Proj. Job. No. 7715-101, Seminole Co.;

Duval Eng. & Contr., Box 1588, Jacksonville, Fla., LB **$103,862**, Ocala rock base, Type 1-A surf. tr. with b. conc. surf. course, Type II; storm sewers, etc. State Rd. 100, State Proj. Job. No. 3901-107, Union Co.;

George G. Tapper Co., Port St. Joe, Fla., LB **$75,506**, shell stabil. base with Type 2 surf. tr., etc. 2.96 mi. streets in Apalachicola, State Proj., Job. No. 4954-153, Franklin Co.; LB **$93,100**, sand-clay base with Type 2 surf. tr. etc. 7.19 mi. State Rd. 12, State Proj. Job. No. 5010-104, Gadsden Co.;

J. H. Whitaker, Titusville, Fla., LB **$227,488,** sand bit. road mix pavement, etc. 3.56 mi. State Rd. 402, State Proj., Job. No. 7016-110, Brevard Co.;

Langston Constr. Co., Box 3031, Orlando, Fla., LB **$148,959,** grading roadway; reworking existing base; Type 2 surf. tr. etc. 9.4 mi. State Rd. No. 15-A, State Proj., Job No. 7520-102, Orange Co.;

Marion Constr. Co., Ocala, Fla., LB **$193,538,** Ocala rock base, b. conc. surf. course, Type I with binder, etc. 2.415 mi. State Rds. Nos. 15 and 600, State Proj. Job. No. 7904-112, Volusia Co.;

W. L. Cobb Constr. Co., Box 977, Tampa, Fla., LB **$174,441,** Ocala rock base, b. conc. surf. course, Type I with binder; storm sewers; curb and gutter; maint. of traffic etc., 0.889 mi. State Rd. No. 15, State Proj., Job No. 7905-114, Volusia Co.;

Hubbard Constr. Co., Orlando, Fla., LB **$83,216,** limerock base with Type 2 surf. tr., storm sewers, etc. 0.257 mi. State Rd. 500, State Proj. Job No. 9203-106, Osceola Co.;

J. W. Conner & Sons, Inc., Box 2522, Tampa, Fla., LB **$356,375,** Miami or Ocala rock base; Type 2 surf. tr.; two concrete box culverts of bridge length, etc. 7.467 mi. State Rd. No. 70, State Proj., Jobs Nos. 1305-105 and 0404-150, Manatee and DeSota Counties;

Cleary Bros. Constr. Co., Box 6815, West Palm Beach, Fla. LB **$1,181,845,** Miami rock base with hot binder course and b. conc. surf. course, Type I; 402 ft. bridge over Intracoastal Waterway of concrete and steel approach spans on alternate precast reinforced or prestressed concrete piling; double-leaf bascule span and control house; small drainage structures, etc. 3.363 mi. State Rd. No. 5, FAP No. F-003-3 (22), Job. No. 9304-202, Palm Beach Co.;

cancelled bids to have been opened Dec. 21, work on SR 10, 64 ft. concrete curb and gutter sect., paved with Ocala rock base with b. conc. Type I and binder; medium grading, etc; work on SR 200, widening with soil-cement base, b. conc. Type II; re-grading shoulders, etc. 1.402 mi. State Rds. Nos. 10 and 200, State Proj. Jobs Nos. 7201-109 and 7214-112, Duval Co.; shell base; Type 1-A bit. surf. tr.; b. conc. surf. course, Type II; drainage structures; curb and gutter, etc. 4.681 mi. State Rds. Nos. 85 and 397, State Proj. Job. No. 5704-111, Okaloosa Co.; soil-cement base; b. conc. surf. course, Types I and II, etc. 7.24 mi. State Rd. 200, State Proj. Job No. 7214-111, Duval Co. Bids Dec. 21. CD 12/13.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

Delta Paving Co., Box 8044, New Orleans, La. LB **$895,-878.** c. conc. 7.235 mi. Bossier City-Red Point Hy., State Rte. 4, S.P. 1-03-22, F.A. Proj. F 385 (6) and FI 75 (8), Bossier Parish;

W. H. Patterson & Co., Box 2229, Baton Rouge, La. LB **$813,194.** bit. hot mix surf. 12.123 mi. Starks-Dequincy Hy., State Rte. 7, S.P. 12-02-12, 12-03-05 and 12-04-10, F.A. Proj. F 389 (5), Calcasieu and Beauregard Parishes;

T. L. James & Co., Inc., Ruston, La. LB **$1,113,061.** c. conc. 3.487 mi. Baton Rouge-Howell Hy., State Rte. 36, S.P. 60-01-06, East Baton Rouge Parish; LB **$494,300.** c. conc. 6.061 mi. Cypremort-Glencoe Hy., State Rte. 59, S.P. 239-02-12, F.A. Secondary Proj. S 89 (3), St. Mary Parish. Bids Dec. 22. CD 12/1.

BUILDINGS

LOW BIDS AND CONTRACTS

Ed. L. Powers Contg. Co., Jesup, Ga. CA **$768,005.** 5 SCHOOLS, SPRINGFIELD, GA. Effingham Co. Bd. Educ., Springfield, Ga. Bids Nov. 9. CD 10/12.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Mich., Ferndale—BA 1/21—City, Roy F. Goodspeed, Dpt. P. Wks., water sys., surf. storage tank 3 m.g. capacity, 115 ft. diam., 20, 34, 30 in. water mains, pumping station. $650,000. Ayres, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, engrs. CD 4/14/53.

BIDS ASKED—BUILDINGS

▲ **Ill., Chicago**—APARTMENT BLDGS.—BA 2/1—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, 8 apartment bldgs., 859 units, Sedgwick, Oak and Hudson Sts. A. Epstein & Sons Co., 2011 Pershing Rd., Zone 9, archt. CD 5/21/53.

▲ **Wis., Madison** — CITY HALL, COURT HOUSE — BA 2/10—City, City Hall and Dane Co., Court House, City Hall-Court House. $9,000,000. Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., and Law, Law, Potter & Nystrom, 121 S. Pinckney St., Madison, Wis., archts. CD 8/5.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Southern Hills Pit, Inc., 2415 S. Dixie St., Dayton, O. LB **$793,655,** LB **$787,904** and LB **$825,763** for three Alt. low bids, for Phase 1, Northridge Sanitary Sewer Dist., sewer and water lines in southern third of area, DAYTON, O. Comrs. Montgomery Co., Court House, Dayton, O. Bids Dec. 13. CD 11/23.

Walker-Fauber Corp., 321 Sharp St., Ashland, O., LB **$704,910** with mechanical joints and **$741,648** with lead joints, install Stow Township water sys., with approx. 141,456 4- to 16-in. pipe, pumphouse, etc. connecting into Akron sys., STOW, O. Comrs. Summit Co., Court House, Akron, O. Bids Dec. 20. CD 11/19.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Maxon Constr. Co., Inc.,** 131 N. Ludlow St., Dayton 2, O., CA **$20,100,000.** expanding FEED MATERIAL

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PRODUCTION CENTER, FERNALD, O. Atomic Energy Comn., Oak Ridge, Tenn.

▲ **Columbia Constr. Co.**, Chillicothe, O. Owner Builds. **$2,000,000.** 150 HOMES, 28-acre in Sedgwick Addn., IRONTON, O.

▲ **John B. Geis & James E. Henry**, c/o R. G. Ballard & Son, 907 Irving St., Dayton, O. Owner Builds. **$1,000,000** 76 frame HOMES on 25-acre site Woodman Dr., KETTERING, O.,

▲ **Kinnare Corp.**, 2816 W. Monroe St., Chicago, Ill., CA **$1,250,000.** DORMITORY and CHAPEL, LAKE BLUFF, ILL. Servite Fathers of America, Green Bay Rd., Lake Bluff, Ill. Bids Dec. 7, awarded Dec. 18. CD 12/1.

▲ **James L. Callan, Inc.**, 4417 W. North Ave., Milwaukee, Wis. Owner Builds. **$2,000,000.** 1st unit 1 story, 120x390 ft. SHOPPING CENTER, 2nd unit 1 story, 150x360 ft. phase, CUDAHY, WIS. CD 6/9/53.

† **Keno Constr. Co., Inc.**, Box 37, Highland Park, Ill. LB **$874,700**, est. $784,514. INDUSTRIAL BLDGS., related facilities, ENG-47-013-55-3, BARABOO, WIS. U. S. Eng., 478 Federal Bldg., Milwaukee, Wis. Bids Dec. 22. CD 12/14.

Ellis Constr. Co., 23100 W. Eight Mile Rd., Detroit 19, Mich. CA **$603,449.** general contract Roseville High SCHOOL, ROSEVILLE, MICH. Roseville Pub. School Dist. No. 5, Roseville, Mich. Wyeth & Harman, Inc., 1602 Military St., Port Huron, Mich., archt. CD 7/9/53.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

January 11 Iowa January 20, 21 Texas

STREETS AND ROADS

January 11 Iowa January 20, 21 Texas

BIDS ASKED—HEAVY CONSTRUCTION

▲ Tex., Denton—CLASS ROOM, etc.—BA 1/28—Texas State College for Women, Denton, constr. classroom bldg.; health, physical education and recreation bldg.; library; science bldg. and admin. bldg., steel frames drilled foundations, $1,000,000. Plans deposit $75. Page, Southerland & Page, 602 West Ave., Austin, archts. Blum & Guerrero, 4930 Maple St., Dallas, and Wilson & Cottingham, Brown Bldg., Austin, engrs. CD 12/10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **G. I. Johnson & Sons**, 848 W. 79 St., Minneapolis, Minn. LB **$837,354.** Base Bid 1, overhead steam line; LB **$837,090**, Base Bid 2 underground steam line for maintenance hangar, readiness hangar, crash and structural fire station, grading, drain, utilities, Minneapolis-St. Paul International Airport, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Dec. 22. CD 1/30.

▲ **Melco, Inc.**, 1221 Baltimore St., Kansas City, Mo. LB **$1,239,000.** chemical bldg. at Florence water pumping station, OMAHA, NEB. Metropolitan Utilities Dist., 18 and Harney Sts., Omaha, Neb. Bids Dec. 22. CD 11/23.

▲ **Western Contg. Corp.**, 400 Benson Blvd., Sioux City, Ia. LB **$2,757,986.** airfield pavement II, WICHITA, KAN. Boeing Airplane Co., Plant No. II, Personnel Bldg., Wichita, Kan. Bids Dec. 16. CD 12/2.

▲† **U. S. Eng.**, Box 1229, Galveston, Tex., cancelled bids to have been opened Feb. 9, runway, taxiways, aprons, runway lighting, Inv. No. ENG-41-243-55-33. KELLY AIR FORCE BASE, TEX. Est. **$12,000,000.** CD 12/27.

▲† **George Sheaf & Co.**, 449 Neilston St., Columbus 3, O. LB **$1,508,783.** multi-purpose wing hangars diesel fuel storage area utilities, Forbes Air Force Base, Inv. 23-028-55-30. TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Dec. 16. CD 11/24.

BUILDINGS

LOW BIDS AND CONTRACTS

Hasslen Constr. Co., Ortonville, Minn., and **Sioux Falls Constr. Co.**, 800 S. 7 St., Sioux Falls, S. D. CA **$987,680.** general contract HIGH SCHOOL and remodel present bldg., LUVERNE, MINN. Bd. Educ., E. P. Piepgras, clk., Luverne, Minn. CD 12/13, under LB.

▲ **A. H. Neumann & Bros., Inc.**, 514 Hubbell Bldg., Des Moines, Ia., LB **$1,232,000**, general constr. TELEPHONE BLDG., DES MOINES, IA. Northwestern Bell Telephone Co., 604 9th St., Des Moines, Ia. Bids Dec. 14. CD 12/10.

▲† **Fruin-Colnon Contg. Co.**, 1706 Olive St., St. Louis, Mo. and **Utah Constr. Co.**, 100 Bush St., San Francisco, Calif. CA **$39,800,000.** expansion facilities at Weldon Springs Ordnance Works and St. Louis Plant, WELDON SPRINGS and ST. LOUIS, MO. Atomic Energy Comn., Oak Ridge, Tenn. Mallinckrodt Chemical Works, 3600 Second St., St. Louis 7, Mo., are operators of both plants. CD 10/19.

▲ **Rambo Constr. Co.**, 1618 Rogers Rd., Fort Worth, Tex., CA **$1,051,487**, est. $1,250,000, general constr. and site work for constr. HIGH SCHOOL, ARLINGTON, TEX. Arlington Independent School Dist., c/o W. R. Wimbish, supt. Schools, Arlington, Tex. Bids Dec. 21. CD 11/18.

▲ **Beverly Constr. Co.**, 3800 N.W. Hy., Dallas, Tex., Owner Builds. **$1,000,000.** 116-unit APARTMENT, DALLAS, TEX. CD 12/29.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

January 18 Washington

Wash., Bremerton—BA 1/19—City, City Hall, clearing 90 acre site for Union River Dam, $800,000. Plans deposit $5, J. W. Cunningham & Assoc., Portland Trust Bldg., Portland, Ore., engrs. CD 11/10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **R. E. McKee General Contractor, Inc.**, 4701 San Fernando Rd. West, Los Angeles, Calif., LB **$916,618**, est. $855,888, Schedule A, hangar, engineer aviation bldg., AC&W bldg.;

Morrison-Knudsen Co., Inc., 314 Broadway, Boise, Idaho, LB **$216,378**, est. $245,643, Schedule B, 27,650 sq. yd. c. conc. aircraft parking and taxiway constr., etc. for Air National Guard facilities at airport, ENG-45-108-55-81, PORTLAND, ORE. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Dec. 21. CD 11/18.

▲† **Winston Bros. Co.**, 1532 California Ave., Monrovia, Calif. CA **$3,036,358.** Rio Hondo Channel, Whittier Narrows, CIVENG-04-353-55-16, Los Angeles Co., CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. CD 12/14, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Lewis Constr. Co., 1711 Jackson St., Seattle, Wash. CA **$883,720.** general contract 98x106 ft. and 85x122 ft. GYMNASIUMS; 70x125 ft. CAFETERIA addns. to high school, RENTON, WASH. School Dist. 403, 1525 Fourth Ave. N., Renton, Wash. CD 12/13, under LB.

▲ **Cunningham & Brittain, Inc.**, 500 S. Walnut St., Anaheim, Calif. Owner Builds. **$1,792,200.** 144 stucco DWELLINGS, Heather, Orange, and Gondar Aves., LONG BEACH, CALIF.

CANADA

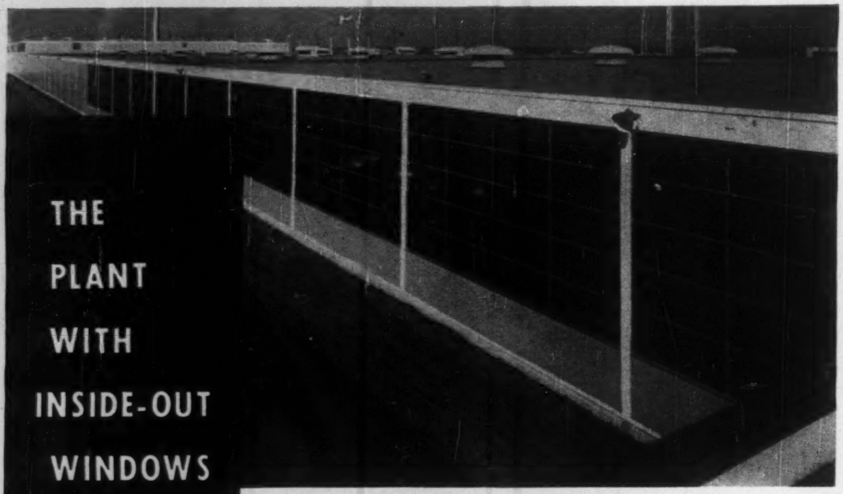
HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ BRITISH COLUMBIA—British Columbia Toll Hys. & Bridges Auth., Victoria,

Western Bridge & Steel Fabricators Ltd., 145 W. First Ave., Vancouver, B. C. LB **$1,134,925.** 2,850 tons steel work for truss spans Agassiz-Rosedale Bridge, Victoria. Bids Dec. 15.

(Proposal Advertisments see pp. 76 & 77)



Luxlite Coolite (glare reduced) installed in sidewall sash at Sawyer Biscuit Company, Melrose Park, Illinois.
Skidmore, Owings & Merrill, Architect, George A. Fuller Company, General Contractor, Hamilton Glass Company, Glazing Contractor.

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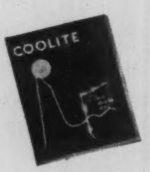

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AFL Eyes Canada

Starts Organization Drive To Combat CIO Activities

AFL leaders were girding themselves this week to launch a full dress organization drive in western Canada, designed to maintain AFL dominance in the construction trades.

A group of 40 U. S. and Canadian union officials have been meeting in Vancouver and Kitimat to map strategy for the drive. According to Carle Berg of Edmonton, international representative of hod carriers, present plans call for a "field staff and a large number of organizers."

Efforts are aimed primarily at counterattacking what the organizers term "raids" by CIO steelworkers on AFL unions at northern British Columbia projects.

Top priority will be given the Alcan works at Kitimat (ENR Aug. 12, 1954, p. 32). "We have let the situation drift too far, and the steelworkers have made some inroads," said Joseph D. Keenan, electrical workers official who is leader of the group meeting at Vancouver. He disclosed that an "army" of AFL organizers soon will be sent to Kitimat to tackle the problem.

Disinclined to believe that "all's fair in love and war," Berg has criticized the steelworkers for attempts to raid while negotiations are under way for CIO-AFL unity. "We are nearer to unity than most people think," he said.

A crackdown on Communists in Canadian AFL unions also is under consideration. Recommendations for a cleanup have been sent to AFL headquarters in Washington but have not yet been disclosed.

Construction Slowdowns Lose Ground in Texas

Elimination of frequent and sporadic construction slowdowns in the Sabine area of eastern Texas is now in sight. A new contract with AFL operating engineers, and a plan devised by the Sabine area building trades councils promise to provide greater stability for labor relations in the future.

Recent slowdowns resulted primarily from failure to reach an agreement with the operating engineers after the August termination of their old contract. This group is the last of the 19 crafts associated with the Orange-Port Arthur and Beaumont Building Trades Councils to conclude their 1954 negotiations.

Lack of uniformity in contract termination dates has been another contributing factor in the sporadic slowdowns. In an effort to eliminate this, the two building trades councils have proposed a March 31 termination date for all building trades contracts in the area. Negotiation of the contracts would also be conducted by the councils. Approval of the plan by the AGC and the Sabine Area Construction Committee is expected.

Under the new operating engineers' contract, heavy equipment operators will get a 15-cent raise now—and 7½ cents more on March 31. Current scale has been $2.75.

Light equipment operators will have 10 cents added to their present rate of $2.35.

Study Group Backs Mitchell In Anti-trust Conclusions

Attorney General Brownell's special committee, appointed to study anti-trust laws (ENR Oct. 7, 1954, p. 74), has voted to recommend continuation of labor's exemption from such legislation.

The long-awaited meeting of the full committee was shrouded in secrecy. But enough of the results were disclosed to indicate that only the general direction of the wind has been determined. Although the committee is not in favor of extending anti-trust laws to labor, it noted union abuses highlighted in the brief submitted by Commerce Secretary Weeks. It affirmed the need for additional restrictions not now contained in the Taft-Hartley Act, but did not specify in what manner these should be achieved.

On the Cabinet level, Labor Secretary Mitchell—not a member of the committee—was a victor. He looks for a solution in amendments to labor rather than anti-trust laws. To Secretary Weeks, labor laws are the wrong vehicle. He has plugged for extension of anti-trust laws—and is expected to continue doing so until the final report is put in shape for submission to the President.

Final recommendations may not be released for several months. Few look for any change in the basic pattern. The ultimate result—if any recommendations are submitted to Congress—is expected to take the form of suggested amendments to the present provisions of the Taft-Hartley Act.

Dale Gets $10,000 Fine, 15-Year Prison Sentence

Evan R. Dale, southern Illinois labor leader, was sentenced to 15 years in prison and fined $10,000 for attempting to extort more than $1 million from a building contractor.

The contractor was Ebasco Services, Inc., of New York. The firm was forced to surrender its contract for construction of a $197-million steam generating plant at Joppa, Ill., because of work stoppages (ENR Dec. 16, 1954, p. 24).

James W. Bateman, business agent for a local of the AFL pipefitters union, also was found guilty of attempted extortion. He was fined $2,000 and placed on probation for five years.

Labor Briefs . . .

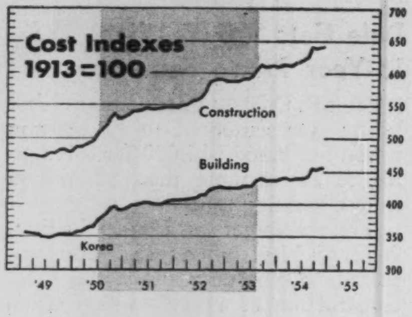
• **Plumbers' strike**—The prolonged plumbers' strike in Kansas City (ENR, Dec. 2, 1954, p. 86) was settled with a 15-cent increase. This brings journeymen's rate to $3.15. New contract termination date is June 1. Future disputes over the termination date will be submitted to arbitration.

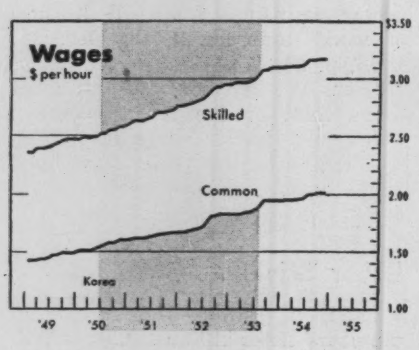
• **Health and welfare**—Four out of every five employes under union contracts in California now are entitled to some form of health and welfare benefits. Part of the record increase is attributed by California's Director of Industrial Relations to the large number of health and welfare plans recently negotiated, especially in the construction field, in the Los Angeles metropolitan area.

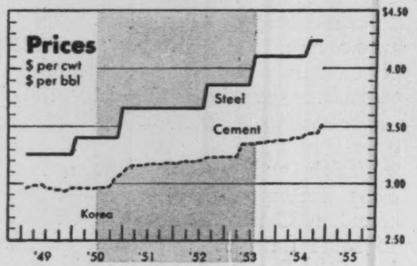
• **Secondary boycotts**—NLRB's controversial "hot cargo" decision in the McAllister case (ENR Dec. 23, 1954, p. 13) contains a new jurisdictional standard for secondary boycott cases. Now, the board will count the entire business of the secondary employer at the affected location—instead of just the business between the primary and the secondary employer.

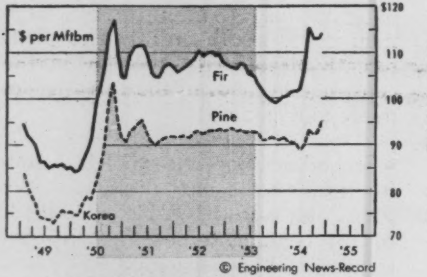
• **Right-to-work**—Atlas Construction Co., Texarkana, has used the Louisiana right-to-work law to obtain a temporary injunction against the Shreveport, La., laborers union. The union claims it is picketing for better wages and working conditions. Company's contention is the union is trying to force hiring of union labor—it says its nonunion employes are now getting prevailing wages.

JANUARY CONSTRUCTION SCOREBOARD









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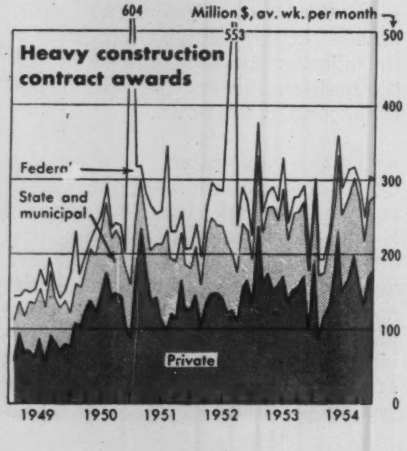


ENR INDEXES (1913=100), 20-cities' average	**1955 Jan.**	**% Change from last Month**	**Year**
Construction Cost	644.32	+0.2	+ 5.0
Building Cost	457.91	+0.2	+ 4.9

WAGE RATES, 20-cities' average			
Common	$2.022	0.0	+ 4.0
Skilled (aver. 3 trades)	3.188	+0.06	+ 3.1
Bricklayers	3.457	0.0	+ 2.8
Structural Ironworkers	3.171	+0.1	+ 3.8
Carpenters	2.936	0.0	+ 2.8

MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.517	+1.5	+ 4.9
Structural Steel, (3-mill aver.), per cwt	4.250	0.0	+ 3.7
Sand, per ton	2.251	0.0	+ 2.2
Lumber, 2x4 Fir, per M. ft. bm	114.222	+0.6	+14.4
Lumber, 2x4 Pine, per M. ft. bm	95.200	+0.9	+ 4.6
Common brick, per M	33.361	+0.4	+ 1.4
Ready-mixed concrete, per c. y	12.404	+1.4	+ 3.5
Structural Clay Tile, 3x12x12 per M	162.762	+0.1	+ 1.9

CONTRACTS AWARDED (Millions)	**1954 Dec.**	**12-Mos. (52-Weeks)**	**% Change from '53 Dec.**	**12-Mos. (53-Weeks)***
Total U. S. (ENR reported)	$1,503.5	$14,542.0	−0.5	− 2.3
Private	889.1	8,255.3	−4.3	− 2.9
Public	614.4	6,286.7	+5.6	− 1.5
Federal	114.0	1,285.7	+49.2	− 7.6
ENR Volume Index, '13 = 100	512	485	−6.4	− 4.2
NEW CAPITAL (Millions)				
Total	915.4	11,421.7	−20.0	− 1.5
State & Municipal Bond Sales	813.4	5,931.5	+12.3	+20.2
Corporate Security Sales	95.9	2,595.1	−76.8	−38.6
Federal (non-federal work)	6.1	788.6	−6.4	− 9.2
Federal (federal work)	.....	2,106.5	.....	+34.6

* Computed on weekly average

MATERIAL SHIPMENTS & LABOR SUPPLIES (millions)	**1954 Oct. (O) Nov. (N)**			
Cement, bbls, Bu. of Mines	27.133(O)	234.849(10)	−1.5	+ 3.3
Fabr. Struc. Steel, tons AISC	.226(N)	2.908(11)	− .24	+ 2.0
Lumber, mil. ft. bm., NLMA	3.330(O)	31.259(10)	+2.4	− 5.1
Lumber Prod., mil. ft. bm., NLMA	3.349(O)	31.235(10)	−5.4	− 6.2
Contract Const. Employ., BLS	2.692(N)	2.631(11)†	−3.5	− 0.5

† Average

ENR INDEX REVIEW

	Construction Cost		**Building Cost**		**Volume**	
	1913=100	1949=100	1913=100	1949=100	1913=100	1949=100
1954						
Jan.	613.86	128.68	436.42	124.14	338	98
Feb.	614.53	128.82	437.09	124.31	345	100
Mar.	613.81	128.67	436.71	124.22	426	123
Apr.	615.81	128.96	437.48	124.44	517	149
May	618.51	129.66	438.24	124.65	648*	187*
June	621.51	130.29	439.67	125.06	510	147
July	627.86	131.62	444.05	126.23	547	158
Aug.	642.13	134.60	455.54	129.48	525	152
Sept.	640.68	134.31	454.28	129.13	503	145
Oct.	641.89	134.56	455.54	129.49	423	122
Nov.	643.02	134.80	456.34	129.72	522	151
Dec.	643.31	134.86	456.77	129.84	512	148
Av.	**628.02**	**131.65**	**445.68**	**126.73**	**485**	**140**
1955						
Jan.	644.32	135.07	457.91	130.17	.....	...

* Revised.

December Awards 24% Above November, Total $1.5 Billion

Commercial, industrial, housing and highway awards lead the way to fast 1954 finish. Most types share the rise

Construction awards reported to ENGINEERING NEWS-RECORD in December totaled $1,503 million, only slightly less than the strong showing of December 1953, and about 24% ahead of awards in November 1954. This brings the total of contract awards for 1954 to only 2% behind 1953. After a poor start in 1954, awards steadily closed the gap as the year went on. (For a complete story on 1954 awards, see page 21.)

- **Most types gained**—Most types of public and private work shared in the rise from November. State and municipal awards climbed more than 22% to a total of $500 million. However, federal work was down to $114 million from $132 million in November. Combining state and municipal awards with federal contracts, all but three types rose in December. The exceptions: unclassified, sewerage, and public housing. There was a big jump in contracts for streets and roads—from $149 million to $189 million.

- **Private work**—But the gains in private work were mainly responsible for the big rise in total awards. Total private contracts were $889 million—not far below the record for the month set last December, which included $400 million in two huge industrial contracts.

Due to a $130-million award for a big project at Kansas City, commercial contract volume almost doubled—from $149 million in November to $279 million last month. Industrial awards rose about 36% from $129 million in November to $175 million last month. With $363 million in new contracts, housing was slightly behind the fast pace it set in November, which was a new high for that month. But it set a new monthly record for December. The private unclassified category also jumped sharply.

- **Regions**—As compared with last year, three regions improved their showing in December, one region stayed the same, and two slipped back.

The Middle Atlantic region increased its lead for the year to 15% above 1953, compared with 13% for the first 11 months. By increasing total awards from $139 million in November to $166 million in December, the Far West reduced the 1953-1954 gap to 2%, compared with a gap of 6% for the first 11 months.

The South, which continued to be far behind 1953, improved slightly in December, it was 24% behind for the year, compared with 25% at the end of November.

New England's total awards of $70 million were well ahead of last year, keeping its 1953-1954 gain at 18%.

Two regions lost ground. In the Midwest, a decline in awards widened the 1953-1954 drop from 13% to 16%. And in the West-of-Mississippi area, contracts awarded for 1954 finished off 6% ahead of 1953, after being up 8% at the end of November.

Cost Indexes Reach New Highs

ENR's Construction Cost Index and Building Cost Index edged up by a slight 0.2% to new record highs. Lumber increases in 11 cities and cement hikes in six cities are mainly responsible.

The Construction Cost Index for January is 644.32, based on 1913 = 100. That is 5.0% above a year ago. The Building Cost Index is 457.91 on the same 1913 basis, and is 4.9% above a year ago.

Bulk cement prices rose 15 cents per bbl. in five cities, and 33 cents in Kansas City. Douglas fir 2x4 prices are up in eight cities, with boosts ranging from $1 to $4 per Mftbm.

(B&F continued on page 74)

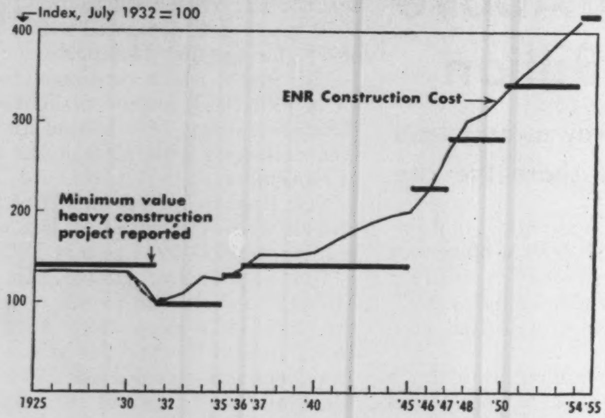
ENGINEERING CONSTRUCTION CONTRACTS—DECEMBER 1954

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Five Weeks—Thousands of Dollars (000 Omitted)

	December, 1954							U. S. Cumulative Twelve Months		%	
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1954 (52 weeks)	1953 (53 weeks)	Change '53 to '54 (Av. Wk.)	Canada December 1954
Public Works											
Waterworks	223	4,805	4,468	3,938	10,758	1,417	25,609	245,228	247,011	+ 1	3,983
Sewerage	1,249	6,827	2,553	8,320	5,656	5,502	30,107	387,890	431,200	— 8	1,652
Bridges	5,951	18,107	11,708	2,333	7,300	4,655	50,054	499,394	743,350	—32	1,617
Earthwork and drainage	126	2,731	358	828	15,252	31,515	50,810	338,781	374,251	— 8	722
Streets and roads	14,847	49,488	24,640	47,164	39,459	13,795	189,393	1,918,870	1,792,452	+ 9	1,739
Public buildings, residential	....	5,556	824	1,720	5,016	1,078	14,194	255,032	375,505	—31	1,261
Other public buildings	9,079	58,229	17,053	31,071	34,915	18,889	169,236	1,761,972	1,736,483	+ 3	16,603
Unclassified	8,131	19,213	21,171	2,093	21,416	12,968	84,992	879,567	805,325	+11	2,044
Total public	**39,606**	**164,956**	**82,775**	**97,467**	**139,772**	**89,819**	**614,395**	**6,286,734**	**6,505,577**	**— 2**	**29,621**
Federal government (included in above classifications)	8,105	7,137	18,847	2,577	47,999	29,363	114,028	1,285,679	1,417,572	— 8	4,641
Private											
Bridges	....	405	....	....	470	....	875	11,263	8,925	+29	....
Industrial buildings	4,512	24,953	14,165	27,037	62,431	41,616	174,714	1,876,309	3,178,129	—40	27,588
Mass housing	16,760	178,030	12,256	38,073	90,171	27,784	363,074	4,232,027	3,464,156	+25	64,988
Commercial buildings	9,479	95,000	5,640	17,001	145,612	5,821	278,553	1,550,702	1,156,937	+37	11,310
Unclassified	64	225	899	2,433	66,991	1,263	71,875	584,998	857,169	—30	1,420
Total private	**30,815**	**298,613**	**32,960**	**84,544**	**365,675**	**76,484**	**889,091**	**8,255,299**	**8,665,316**	**— 3**	**105,306**
Total Engineering Construction:											
December, 1954—5 weeks	**70,421**	**463,569**	**115,735**	**182,011**	**505,447**	**166,303**	**1,503,486**	....	....	....	**134,927**
November, 1954—4 weeks	46,941	349,408	143,521	225,377	310,323	139,012	1,214,582	....	....	....	159,262
December, 1953—5 weeks	61,498	351,172	117,248	339,018	544,823	97,162	1,510,921	....	....	....	92,490
Twelve Months—1954	**733,878**	**3,843,878**	**1,892,384**	**2,794,557**	**3,564,936**	**1,712,400**	....	**14,542,033**	....	**— 2**	1,627,415
Twelve Months—1953	634,961	3,400,193	2,522,889	3,392,382	3,439,183	1,781,285	....	....	15,170,893	....	1,282,357
% Change '53 to '54 (Av. Wk.)	+18	+15	—24	—16	+6	—2	....	....	....	....	+30

How project minimums have been changed with changes in construction costs



I—Minimum sizes of construction projects reported in Engineering News-Record

Types of projects reported	Present minimum values 1951-1954	New minimum values to be in force Jan. 2, 1955
Heavy construction		
Waterworks, waterways	$ 34,000	$ 44,000
Other public works and Private non-building	60,000	73,000
Buildings		
Industrial	82,000	93,000
Commercial and public	300,000	344,000
Mass housing	300,000	344,000

How this size screen adjustment works is shown in Table II and in the accompanying chart.

Cost Rise Pushes Up ENR's Project Minimums

Effective Jan. 2, minimum dollar values of projects reported by ENGINEERING NEWS-RECORD have been increased in ratio to the rises in ENR's two cost indexes.

This is why: to make it practical to report construction projects on a uniform, continuing basis in all 48 states, ENR automatically selects all projects which are of a specified minimum size or larger.

Because of the wide variety of projects, this size has to be measured in dollars, even though the objective is to screen projects by physical size rather than by dollar value. Thus when construction costs rise and a smaller project costs more, the dollar minimums have to be changed proportionately to screen out these smaller projects. When costs go down, the dollar minimums have to be lowered to prevent screening out projects of a size previously included.

• **Basis for statistics**—The reports that come through these size screens show the progress of construction projects from the time they are proposed until each contract is let. They are the basis for the $79-billion backlog of proposed construction and for the $14.5 billion in contract awards that were recorded during 1954.

Since 1931, ENR has made seven adjustments in its minimums. The first was applied in 1932 and it reduced minimums in proportion to the drop in costs. But starting in 1935 six changes have successively stepped up the minimums as costs have continued to rise.

Table I (above) shows the new minimums. The minimum for most heavy construction projects has been pushed up from $60,000 to $73,000. For building projects, most types of work have a new minimum of $344,000 instead of $300,000. The minimum for industrial buildings goes up from $82,000 to $93,000.

The chart (above) is an example of how the changes have been made through the years for one particular group of categories—heavy construction projects (except for waterworks, earthwork, etc.

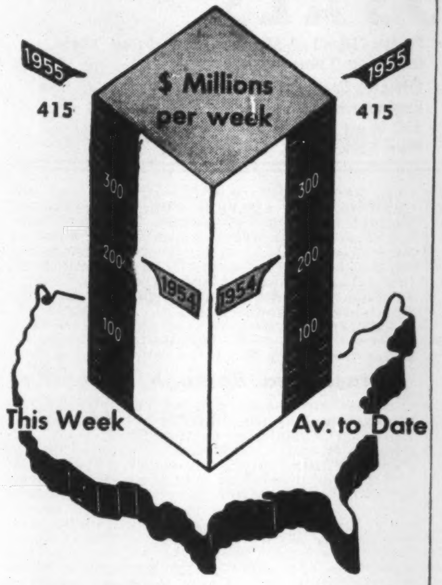
II—Record of changes in ENR construction project minimum size screens

Period during which minimum was used	ENR Constr. Cost Index at start of period		For pub. works excl. bldgs			
			Waterworks; earthwork, etc.		Other	
Date	1913 =100	July '32 =100		July '32 =100		July '32 =100
1925-1931	210.4	137	$15,000	143	$25,000	143
1932-1935	153.4	100	10,500	100	17,500	100
1936	197.2	129	14,000	133	23,000	132
1937-1945	215.7	141	15,000	143	25,000	143
1946-1947	334.6	218	22,500	214	40,000	229
1948-1950	436.9	285	28,000	267	50,000	286
1951-1954	530.0	346	34,000	324	60,000	343
1955-	643.0	419	44,000	419	73,000	417

Period during which minimum was used	ENR Bldg. Cost Index at start of period		For buildings			
			Industrial		Commercial, Public & Mass Housing	
Date	1913 =100	July '32 =100		July '32 =100		July '32 =100
1925-1931	182.7	131	$40,000	140	$150,000	143
1932-1935	139.5	100	28,500	100	105,000	100
1936	168.3	121	37,000	130	140,000	133
1937-1945	185.5	133	40,000	140	150,000	143
1946-1947	258.1	185	55,000	195	205,000	195
1948-1950	333.1	239	68,000	239	250,000	238
1951-1954	391.4	281	82,000	288	300,000	286
1955-	456.3	327	93,000	326	344,000	327

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 1 wk 1955	Cumulative 1 wk 1954	Cumulative 1 wk % chge
Federal	$97.9	$97.9	$11.6	+744
State and municipal ...	84.1	84.1	135.3	−38
Total public....	182.0	182.0	146.9	+24
Total private...	232.9	232.9	78.9	+195
U. S. Total.....	$414.9	$414.9	$225.8	+84

Contracts by type of work

	This Week	1955	1954	% chge
Waterworks	$6.2	$6.2	$7.7	−19
Sewerage	10.7	10.7	7.0	+53
Bridges	7.8	7.8	6.9	+13
Highways	39.6	39.6	59.8	−34
Earthwork, waterways ...	6.6	6.6	4.1	+61
Buildings:				
Public, excl. hsg.	82.2	82.2	50.7	+62
Housg., public.	0.6	0.6	2.5	−76
Housg., private	102.8	102.8	34.4	+199
Commercial ..	17.7	17.7	18.7	−5
Industrial ...	107.6	107.6	22.3	+383
Unclassified	33.1	33.1	11.7	+183
Total	$414.9	$414.9	$225.8	+84

NOTE: Minimum size projects (effective Jan. 1, '55) included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

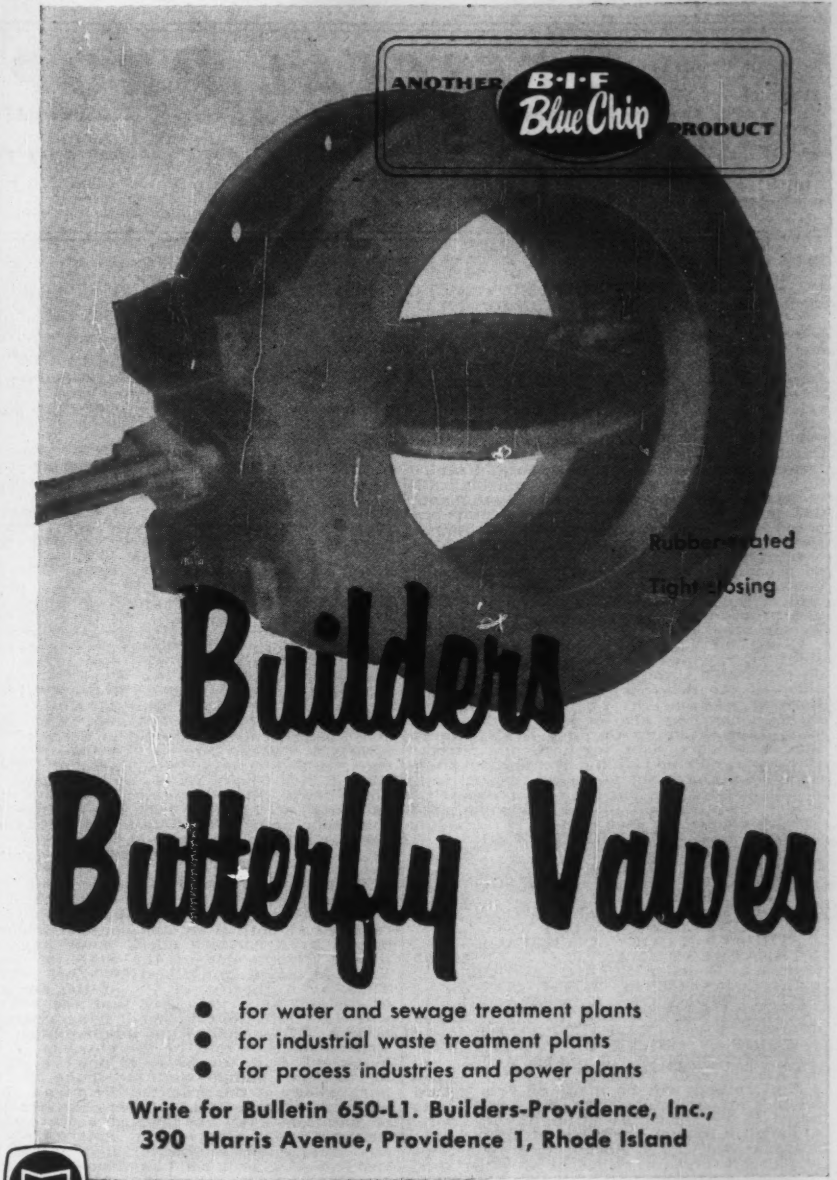
(millions of dollars)	Week of Dec. 30 1954	1954 Total	% chge '53-'54*
Corporate securities......	$16.2	$2,595.1	−39
State and municipal:			
All except housing.....	402.5	5,819.1	+25
Housing	21.4	112.4	−60
Federal loans	1.8	115.6	+3
Federal aid	...	673.0	−13
Total non-federal	$441.8	$9,315.3	−7
Federal appropriations:			
In U. S.............	...	$2,073.3	+32
Outside U. S.........	...	33.2	+15
Total new capital........	$441.8	$11,421.7	−2

*Based on av wk—52 wks in '54, 53 wks in '53

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost..	12/30/54†	644.32	309.72	135.07
	12/2/54†	643.31	309.24	134.86
Building cost	12/20/54†	457.91	247.53	130.17
	12/2/54†	456.77	246.92	129.84
Volume	Dec.	512	208	148
	Nov.	522	212	151

† Official monthly indexes for Dec. 1 & Jan. 1



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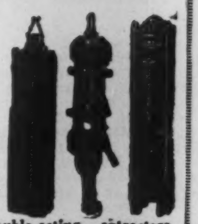

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OFFICIAL PROPOSALS

RATE: **The rate for Official Proposal advertising is $1.80 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.**

CLOSING DATE: **Friday 10:30 A.M. for issue dated the following Thursday.**

SEND COPY TO: **Official Proposal Division,**
Engineering News-Record
330 West 42nd Street
New York 36, N. Y.

Bids: January 26, 1955

Construction of a Sewerage System

Sealed proposals will be received by the Mercersburg Borough Authority, at the office of the Secretary of the Mercersburg Borough Authority, 21 West Seminary Street, Mercersburg, Franklin County, Pennsylvania, until 2:00 P. M., E. S. T., January 26, 1955, and they will be publicly opened and read shortly thereafter at the Community Room in the First National Bank, Center Square, Mercersburg, Franklin County, Pennsylvania, for furnishing all necessary labor, materials and equipment, and performing all work for the Contracts noted below. Separate proposals will be received upon five (5) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or bid bond in amount not less than ten (10) per cent of the bid total, all in accordance with the provisions contained in the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications will be on File, for inspection purposes only, at the office of the Secretary of the Mercersburg Borough Authority, 21 West Seminary Street; they may also be seen at the office of Gannett Fleming Corddry & Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania, from whom they may be obtained, not to exceed two (2) sets of any particular Contract to a prospective bidder, upon deposit of the following indicated amounts for each set:

Contract One—CONSTRUCTION OF A SEWERAGE SYSTEM	$20.00
Contract Two—GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$20.00
Contract Three—PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$20.00
Contract Four—HEATING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$20.00
Contract Five—ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$20.00

Full refund will be made only to actual bidders on the five (5) prime Contracts noted above, for return of one (1), no more, of each set in good condition within ten (10) calendar days after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty (50) per cent of deposit.

Gannett Fleming Corddry &
Carpenter, Inc., Engineers
600 North Second Street
Harrisburg, Pennsylvania

Mercersburg Borough Authority
Mercersburg
Franklin County,
Pennsylvania

Bids: January 28, 1955

Contract O & M—267

THE PORT OF NEW YORK AUTHORITY
REPAIRS TO FENDER SYSTEM
CITY CHANNEL
PORT NEWARK
PROPOSAL NO. 541

Sealed proposals for furnishing all labor, material and equipment for repairing fender systems in the City Channel, Port Newark, N. J., will be received at the office of the Director of Purchase and Administrative Services, The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11 A.M. (E.S.T.) Friday, January 28, 1955, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK
AUTHORITY
Howard S. Cullman, Chairman

Bids: January 20, 1955

New York State Thruway Authority

TYPE "B" GAS STATION AND RESTAURANT AT PLATTEKILL, N. Y. AND TYPE "B" GAS STATION AND RESTAURANT AT MODENA, N. Y.
NOTICE TO BIDDERS

Separate sealed proposals covering Construction; Heating, Ventilating and Air Conditioning; Plumbing; Electric; Elevator; and Commercial Refrigreation Work, for New York State Thruway Authority, Type "B" Gas Station and Restaurant at Plattekill, N. Y.; and for Type "B" Gas Station and Restaurant at Modena, N. Y., in accordance with Specifications Nos. 19192, 19193, 19194, 19195, 19196 and 19202 and accompanying drawings will be received by Henry A. Cohen, Director, Bureau of Contracts and Accounts, Department of Public Works, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of the New York State Thruway Authority, until 2:00 o'clock P.M., Eastern Standard Time, on Thursday, January 20, 1955 when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor, shall be for all specified work required at both sites, and shall be accompanied by a certified check made payable to the Comptroller of the State of New York as agent for the New York State Thruway Authority, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. The Authority reserves the right to reject any or all bids. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract, and a separate bond for the payment of laborers and materialmen as follows: on contracts not more than $500,000.00, 100% of the amount of the contract; on contracts in excess of $500,000.00 and not more than $1,000,000.00, the bond shall be in the amount of $500,000.00. Drawings and specifications may be examined free of charge at the following offices:

State Architect, 270 Broadway, New York City
State Architect, The Gov. A. E. Smith State Office Building, Albany, N. Y.
District Engineer, 109 N. Genesee Street, Utica, New York
District Engineer, 301 E. Water Street, Syracuse, New York
District Engineer, Barge Canal Terminal, Rochester, New York
District Engineer, 65 Court Street, Buffalo, New York
District Engineer, 30 West Main Street, Hornell, New York
District Engineer, 444 Van Duzee Street, Watertown, New York
District Engineer, Pleasant Valley Road, Poughkeepsie, New York
District Engineer, 71 Frederick Street, Binghamton, New York
District Engineer, Babylon, Long Island, New York

Drawings and specifications may be obtained by calling at the Bureau of Contracts and Accounts, Department of Public Works, 14th Floor, The Governor A. E. Smith State Office Building, Albany, New York, or at the State Architect's Office, 18th Floor, 270 Broadway, New York City, and by making deposit for each set as follows: Construction, $40.00; Heating, Ventilating and Air Conditioning, $30.00; Plumbing, $30.00; Electric, $30.00; Elevators, $10.00; Commercial Refrigeration, $5.00; or by mailing such deposit to the Albany address. Checks shall be made payable to the New York State Department of Public Works.

Proposal blanks and envelopes will be furnished without charge.

DATED: 12/13/54

Bids: February 3, 1955

Catasauqua Borough Authority

Sealed proposals will be received by the undersigned at the office of the Catasauqua Borough Authority, in the Town Hall, 118 Church Street, Catasauqua, Lehigh County, Pennsylvania until Thursday, 8:00 P.M. E.S.T. Feb. 3, 1955 at which place and time, or shortly thereafter they will be publicly opened and read, for furnishing all necessary labor, materials and equipment, and performing all work for the Contracts noted below. Separate proposals will be received upon five (5) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten (10) percent of the bid total, all in accordance with the provisions contained in the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications will be on file, for inspection purposes only, at the office of the Catasauqua Borough Authority in the Town Hall, 118 Church Street, Catasauqua, Pennsylvania; they may also be seen at the office of Gannett Fleming Corddry & Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania, from whom only they may be obtained, not to exceed two (2) sets of any particular Contract to a prospective bidder, upon deposit of the indicated amounts for each set:

Contract One—CONSTRUCTION OF A SEWERAGE SYSTEM	$25.00
Contract Two—GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00
Contract Three—PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00
Contract Four—HEATING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00
Contract Five—ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00

Full refund will be made only to actual bidders on the five (5) prime Contracts noted above, for return of one (1), no more, of each set in good condition within ten (10) calendar days after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty (50) percent of deposit.

Gannett Fleming Corddry &
Carpenter, Inc., Engineers
600 North Second Street
Harrisburg, Pennsylvania

Catasauqua Borough Authority
Catasauqua
Lehigh County,
Pennsylvania

CONTRACTORS
WATCH
THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

Bids: January 25, 1955

1949

New Jersey Turnpike Authority

CONTRACT NO. N-19

Proposals are invited for Contract No. N-19 which involves the construction of the substructure for the Bayview Viaduct, consisting of nineteen (19) piers, two abutments and two retaining walls, and other incidental work, extending from the Caven Point Road Interchange to Bayview Avenue, in Jersey City, Hudson County, New Jersey, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Borrow Excavation...	13,600 Cu. Yds.
Open Foundation Excavation........	7,200 Cu. Yds.
Untreated Timber Piles	58,000 Lin. Ft.
Treated Timber Piles..	25,000 Lin. Ft.
Steel Piles............	10,700 Lin. Ft.
Concrete	10,400 Cu. Yds.
Reinforcement Steel......	770,000 Lbs.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'Clock Eastern Standard Time on the morning of January 25, 1955, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after January 3, 1955, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
December 31, 1954

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4325), will be received at Bismarck, North Dakota, until February 8, 1955, for furnishing labor and materials for Edgeley-Croton 115-kilovolt Transmission Line, Transmission Division, North and South Dakota, Missouri River Basin Project. Location: In La Moure and Dickey Counties, North Dakota; and Brown County, South Dakota. Principal items are: 550 structures, furnishing and constructing various types of wood pole structures; 1,743 assemblies, furnishing, assembling, and attaching insulator assemblies; 80.5 miles of line, furnishing and stringing three 336,400 circular-mil ACSR conductor; 80.5 miles of line, furnishing and stringing two ⅜-inch, galvanized steel overhead ground wires; and other work. Completion time 450 days. For particulars, address Bureau of Reclamation, Bismarck, North Dakota; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, December 22, 1954. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., JANUARY 21, 1955, for Project 1G3, Blue Ridge Parkway, Amherst County, Virginia. Grading, 5 bridges, base course and other work from Otter Creek Bridge No. 2 to James River. Length: 4.951 miles. The approximate quantities of the more important items are: 324,160 cu. yd. Excavation; 30,000 tons Crushed Gravel or Crushed Stone; 1,815 cu. yd. Concrete; 286,000 lb. Reinforcing Steel; 5,313 cu. yd. Stone Masonry; and 5,800 cu. yd. Loose Riprap. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Spelman, Division Engineer.

Bids: January 18, 1955

Contract 399

MODIFYING THE STRUCTURE AT SHAFTS 19

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, January 18, 1955, for Contract 399, for modifying the structure at Shafts 19 of the Delaware aqueduct in the Town of Mount Pleasant, Westchester County, New York. The work includes the casting and installation in the waterways of reinforced concrete blocks for weirs and sidewalls, the construction of a reinforced concrete vent chamber, the removal and relocation of vent piping, the removal and replacing of reinforced concrete roof covers, the furnishing and erection of a wire fence, and excavating, refilling, embanking, paving, masonry and other work incidental to or in connection with that mentioned above, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of five thousand dollars ($5,000.00) for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1316 at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: January 28, 1955

Contract O & M—268

THE PORT OF NEW YORK AUTHORITY
ALTERATIONS TO FENDER SYSTEM EAST SIDE OF PIER
PORT AUTHORITY GRAIN TERMINAL COLUMBIA STREET PIER
PROPOSAL NO. 542

Sealed proposals for furnishing all labor, material and equipment for removing the existing fender system and furnishing and installing a new fender system on the east side of the Columbia Street Pier at the Port Authority Grain Terminal, Brooklyn, N. Y., will be received at the office of the Director of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11 A.M. (E.S.T.) Friday, January 28, 1955, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: January 26, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M., Eastern Standard Time, the 26th day of January 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

For the construction of substructure of the Lehigh River Bridge, the substructure of the Pohopoco Creek Bridge and the grading between these structures of the Turnpike Section 36-EF, part of the Northeastern Extension of the Pennsylvania Turnpike in Mahoning Township and Parryville Borough, Carbon County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 1,420 feet southeast of the center line of Legislative Route 163 at Turnpike Station 167 + 80.55 in Mahoning Township, Carbon County; thence in a northwesterly direction 2,133.12 feet to Turnpike Station 199 + 13.67 at a point approximately 713 feet northwest of the center line of Legislative Route 163 in Parryville Borough, Carbon County, a distance of approximately 0.4 miles.

The approximate quantities of the principal items for the Lehigh River Bridge Substructure are as follows:

Class II Excavation..	6,820 cubic yards
Class 2A Excavation..	2,720 cubic yards
Class A Concrete in Land Pier Bases and Abutment Footings..	2,050 cubic yards
Class A Concrete in River Pier Bases...	2,230 cubic yards
Class A Concrete in Land, River Pier Shafts, Abutment Walls and Wing Walls	3,130 cubic yards
Plain Steel Bars......	701,000 pounds
Structural Steel	6,900 pounds
H-Beam Bearing Piles (14-BP-73)	5,014 lineal feet

The approximate quantities of the principal items for the Pohopoco Creek Bridge Substructure are as follows:

Class II Excavation..	2,895 cubic yards
Class 2-A Excavation..	525 cubic yards
Class A Concrete in Land Pier Bases and Abutment Footings..	945 cubic yards
Class A Concrete in Creek Pier Bases...	213 cubic yards
Class A Concrete in Land and Creek Pier Shafts, Abutment Walls and Wing Walls	3,503 cubic yards
Plain Steel Bars......	481,800 pounds
Structural Steel.......	4,800 pounds
H-Beam Bearing Piles (10-BP-42)	1,398 lineal feet

The approximate quantities for the roadway are as follows:

Class I Excavation....	6,480 cubic yards
Borrow Excavation....	12,250 cubic yards

Copies of plans and specifications and other contract documents, including cross-sections, are on file and open to public inspection at the office of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 10 January 1955. Plans, specifications, cross-sections and other contract documents will be available by this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy. Copies of cross-sections will be furnished with the plans.

Plans, cross-sections, and contract documents for this section, exclusive of specifications, may be purchased from the Pennsylvania Turnpike Commission for the sum of twenty (20) dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P.O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
28 December 1954

OFFICIAL PROPOSALS

(Continued from preceding page)

Bids: January 25, 1955

The Mississippi River Bridge Authority
Contract No. 3

INVITATION TO TENDER

The Mississippi River Bridge Authority of the State of Louisiana invites proposals for the construction of the Substructure of the River Crossing for the Greater New Orleans Bridge over the Mississippi River at New Orleans, Louisiana. Sealed proposals for the Work described will be received by The Mississippi River Bridge Authority in the office of the Authority, 422 City Hall Annex, New Orleans, Louisiana, until 10:00 A.M., Central Standard Time, January 25, 1955. Proposals will not be received after this hour. At 10:00 A.M. of the same day and date, the proposals will be publicly presented, publicly opened and publicly read in the Commission Council Chamber, City Hall.

This Contract No. 3 covers the furnishing of all materials for and the construction of the four piers, designated I, II, III and IV, supporting the river spans of a four-lane highway bridge in the City of New Orleans over the Mississippi River in the vicinity of Thalia Street in New Orleans and Bringier Street on the Algiers side, New Orleans, a willow mattress and timber fender for Pier II, and incidental construction.

A fuller description of the work to be done and of the requirements, provisions, and details thereof is given in the Contract Drawings, Contract Documents and Specifications, copies of which are on display in the office of the Authority, Room 422, City Hall Annex, New Orleans, Louisiana, and in the offices of the Engineers, Modjeski and Masters, 2400 Canal Street, New Orleans, Louisiana, and State Street Building, Harrisburg, Pennsylvania, or may be obtained from said latter office upon the deposit of Twenty Dollars ($20.00) per set. Deposit checks shall be made payable to Modjeski and Masters.

No Proposal will be received unless accompanied by a certified check satisfactory to the Authority drawn upon a National or Louisiana State Bank or Trust Company having an office or place of business in New Orleans, Louisiana, and payable to the order of The Mississippi River Bridge Authority for the sum of Five Hundred Thousand ($500,000) Dollars as security for the proper execution of the Contract. Such check must not be enclosed in the sealed envelope containing the bid but must be delivered to the office of the Authority. Proper receipt for the deposit will be given by the Authority.

THE MISSISSIPPI RIVER BRIDGE AUTHORITY
Neville Levy, Chairman

Bids: January 18, 1955

Cleaning and Lining 30-in. Water Main and Appurtenant Work

CITY OF WORCESTER
DEPARTMENT OF PUBLIC WORKS

Sealed bids for cleaning and lining 30-in. Water Main and Appurtenant Work will be received at the office of City Manager, Room 306, City Hall, Worcester 8, Mass., until 10 a.m. Eastern Standard Time, January 18, 1955, and at that time publicly opened and read. The work includes cleaning and lining about 5,600 lin. ft. of 30-in. cast-iron pipe adjacent to and under Holden Reservoir No. 2.

Drawings and contract documents may be examined at the Office of the Commissioner of Public Works, 20 East Worcester Street, Worcester, Mass., and examined and obtained at the office of Metcalf & Eddy, Engineers, 1300 Statler Building, Boston, Mass., $10 deposit required. A surety company bond securing faithful performance and covering the provisions of General Laws Chapter 149-S29 will be required. Proposal guarantee of a $1,500 certified check will be required with the bid. Minimum wage rates under C461 of Acts of 1935 have been determined. The Contractor will be bound by the applicable statutory provisions of law. The location of this work may be inspected. The City reserves the right to reject any or all bids. Mark envelopes: "Proposal for Cleaning and Lining 30-in. Water Main, Contract 7".

CITY OF WORCESTER
By
Earl R. Perry
Commissioner of Public Works

EMPLOYMENT

OPPORTUNITY for an ESTIMATOR

Applicant should be under 40 years of age with ability to price shafts, tunnels, dams, bridges, foundations and other heavy construction.

Work with chief estimator of a progressive organization for a Pittsburgh corporation that recognizes and rewards, ability and effort. Replies will be acknowledged.

P-4903, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

PROJECT MANAGER

For Proposed Mediterranean Work
Two Years Service

Should have prior off-shore administrative experience with U. S. Corps of Engineer Procedure

Project Scope: Heavy grading, underground & surface utilities, pavements, permanent military housing & buildings all types—electric installations—industrial piping.

P4923, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

EXPRESSWAY ENGINEERS WANTED

Midwest engineering firm has openings for one experienced expressway engineer capable of supervising all phass of the design of a modern toll road, one experienced spcification writer, two experienced highway bridge engineers, one engineer experienced in highway drainage problems, and one engineer experienced in the design of interchanges. Complete information on background, work history, salary, etc. requested. All replies held strictly confidential.

P-4977, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Excellent opportunities now exist in our Research and Engineering Departments for graduate engineers, or equivalent.
Men interested in one of the above fields are invited to call or write:

EMPLOYMENT DIVISION
Caterpillar Tractor Co.
PEORIA, ILLINOIS

STRUCTURAL ENGINEER

We have an unusual opportunity for a graduate design engineer to serve as a consultant with the sales and application engineering department of a strong manufacturer of structural building products. He should be under 45 and have 10 to 20 years design experience on large commercial and industrial structures, as well as the ability to transmit ideas to others. Initial compensation will include a salary of $8-10,000; company car; bonus; and many fringe benefits. If interested, forward two resumes, in confidence to: Tomsett Associates, Management Personnel Counselors, 431 Frick Bldg., Pittsburgh 19, Pa. *Client assumes our fee.*

Highways Development Engineers

For conducting laboratory and field investigations on highway materials and pavements. One an experienced engineer preferably under 40 having at least 5 years research and development experience in concrete and soils including planning of investigations and report writing. Experience in measuring minute strains and deflections desirable. And one a recent graduate with distinct interest in research and development having training in soils or having one or two years experience in highways, preferably on subgrades or base courses. Salaries open, suburban Chicago location.

P4930, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

CIVIL ENGINEERS

Junior positions in California's huge highway program. High level professional experience with excellent promotional opportunities offered to recent college graduates in civil engineering. $376 to start with raise after six months. Positions open at this level only. Write Section E, State Personnel Board, 1015 L Street, Sacramento 14, Calif.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

DRAFTSMAN, STRUCTURAL detailer thoroughly experienced in bridge and building work. This is a permanent job with a medium sized old established fabricator. All employee benefits, paid vacation, insurance, etc. Reply by letter stating experience, etc., to St. Joseph Structural Steel Co., Box 68, Station A, St. Joseph, Mo.

WANTED YOUNG engineer to do design and layout work for precast products plant in Central Pa., now entering pre-stress field. Must be ambitious, possess business ability, and desire to keep abreast of present day precast and prestress designs. Reply P-4915, Engineering News-Record.

BRIDGE DESIGNERS wanted by long established consulting engineer. Unusual opportunities for experienced men. Prompt promotion for younger men. Give education, experience, references and salary expected. P-4912, Engineering News-Record.

CHIEF ESTIMATOR — Philadelphia general contractor needs outstanding man. Must have extensive experience with foundation work, reinforced concrete, and all types of industrial buildings. Submit resume and salary desired. Robert E. Lamb & Son, Inc., 3429 W. Indiana Ave., Phila. 32, Pa.

WANTED: TWO structural steel detailers and designers with experience. Positions permanent. P-4962, Engineering News-Record.

HEAVY CONSTRUCTION Engineer to design construction facilities and assist estimator. Applicant must be graduate engineer, preferably about 35 years old, with five years field experience on bridge or foundation work and five years as draftsman and designer on work of magnitude. Work in Pittsburgh office of nationally known, progressive contractor that offers responsibility and advancement. P-4867, Engineering News-Record.

(Continued on opposite page)

CLASSIFIED **SEARCHLIGHT SECTION** ADVERTISING

EMPLOYMENT • BUSINESS • **OPPORTUNITIES** • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)

$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

INFORMATION:

BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. 36 for January 20th issue closing January 10th

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STRUCTURAL STEEL DETAILERS
STRUCTURAL STEEL CHECKERS

Must be experienced Detailers
and Checkers in Structural
Steel Fabrication
For

PERMANENT EMPLOYMENT

Top Pay, Paid Vacation,
Paid Holidays, Group
Insurance Plan, Etc.

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Houston, Texas

Apply Personnel Department

CONSOLIDATED
WESTERN STEEL
DIVISION

Orange, Texas

Housing Available
in Orange, Texas:

One Bedroom Unit	$40 Mo.
Two Bedroom Unit	$43 Mo.
Three Bedroom Unit	$46 Mo.

All utilities, kitchen range, refrigerator and space heater included in above rentals.

EXPORT SALES TRAINEES

Excellent opportunities now exist in our Export Sales Department for recent college graduates with training in Civil, Agricultural, or Mechanical Engineering; or related fields. Foreign assignments are made upon completion of training.

Men interested in these openings are invited to call or write to:

EMPLOYMENT DIVISION
CATERPILLAR TRACTOR CO.
PEORIA, ILLINOIS

BRIDGE ENGINEERS

Designers—5 years experience in both steel and concrete.
Recent Graduates — structural majors, preferably with Master degrees.
Highway Engineer—Familiar with interchange layouts.

FRANK D. McENTEER
504 Baltimore Avenue, Clarksburg, W. Va.

WHEN

Answering Advertisements

PLEASE *do not send original letters, certificates or photographs. We cannot be responsible for their return. Please send photostat or carbon copies.*

POSITIONS VACANT
(Continued from opposite page)

STRUCTURAL ENGINEER for design and estimating of buildings and bridges who has had design experience with steel fabricator. Also need checkers. The Midwest Steel & Iron Works Co., P.O. Box 5384, Terminal Annex Station, Denver, Colorado.

MECHANICAL ENGINEER—Reg. P.E. 5 years minimum experience in design and specifications; Heating, Plumbing and Air Conditioning. Good Salary. Excellent future for qualified man 30-35. Permanent position. Interview arranged on basis of letter stating qualifications and salary desired. P-4861, Engineering News-Record.

ESTIMATOR FOR general contractor operating in northeast Ohio. Capable of estimating engineering type jobs up to $1,000,000 in size. Give complete information first letter. P-4941, Engineering News-Record.

SURVEY PARTY Chief: Must be fully qualified to take charge of survey party on highway work. Write or call Garden 8-6695 for interview. Charles N. Savery Co., Cotuit, Cape Cod, Mass.

BRIDGE—HIGHWAY Engineers—Designers—Draftsmen. For work on bridges, expressways and turnpikes. Location Midwest. Permanent positions with periodic promotions depending on experience and ability. Paid vacations, sick leave, hospitalization and life insurance. Include education, experience, reference and salary expected in application letter. P-4968, Engineering News-Record.

WANTED—CIVIL Engineering graduate for half-time work in prestressed concrete research at university in eastern Pennsylvania. Opportunity for MS or PhD degree. Salary $120. per month with tuition paid. Address reply to P-5021, Engineering News-Record.

YOUNG, RAPIDLY expanding construction company wants professional engineer for industrial contact work and to head small engineering department. Paper mill industrial background and more than average ability required. P-4991, Engineering News-Record.

ENGINEER—STRUCTURAL Steel large fabricator & erector in New York metropolitan area offers opportunity for engineer experienced in steel construction. Must be capable of taking responsible charge of detailing including, subletting of shop details & coordination with architects & engineers & field follow-up. In replying give particulars of experience & background. P-5023, Engineering News-Record.

ESTIMATOR—N. Y. State general contractor specializing in commercial, industrial and institutional work has an opening for an estimator. Applicants should have an engineering or architectural background, experience in field work and job conditions, and several years estimating experience. P-5024, Engineering News-Record.

(Continued on following page)

Construction Engineer

Graduate Civil Engineer with 15 to 20 years experience in design, preparation of estimates, field supervision & job management of industrial buildings involving many mechanical trades. Permanent position, liberal benefit plans, excellent working conditions. Modern plant 20 miles from New York City. Submit complete resume of training, experience & salary requirements.

P-4990, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SALARIED POSITIONS $5,000 — $35,000

We offer the original personal employment service (established 44 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc.
659 Brisbane Bldg. Buffalo 3, N. Y.

ENGINEERS

STRUCTURAL STEEL SALES PROMOTION

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P-4753, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Excellent opportunity for Engineers experienced in design of Filter Plants and Water Works. Good living conditions and Bonus and Pension Plan. Include experience, date available, salary desired in first letter. Gannett Fleming Corddry & Carpenter, Inc., Box 366, Harrisburg, Pa.

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POSITIONS VACANT

(Continued from preceding page)

EXPERIENCED ASPHALT Plant operator capable assuming full charge modern asphalt plant in Northern New Jersey. Send full information as to background and income requirements in first letter to P-5015, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALES TRAINER—Nationally-known company engaged in the manufacture and distribution of fabricated metal products has opening in New York City office for sales correspondent with civil engineering degree. SW-4692, Engineering News-Record.

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OFFICE MANAGER familiar all phases construction contracting business. Many years experience large projects Branch Offices Latin America. Speaks, reads, writes Spanish. Available immediately. PW-4525, Engineering News-Record.

YOUNG EXECUTIVE engineer experienced in design and execution of pre-stressed concrete structures wants better position. PW-4891, Engineering News-Record.

4 SINGLE men ages 30-35 B.Sci. with engineering, contract and administrative background desires foreign or domestic positions. Personal resumes available. Address PW-4904, Engineering News-Record.

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EQUIPMENT MANAGER for large contractor available in Feb. PW-4967, Engineering News-Record.

AVAILABLE REGISTERED Illinois professional civil engineer and land surveyor. Excellent supervisory experience in heavy industry and construction. Will travel. Age 41, PW-4981, Engineering News-Record.

INSTRUMENT MAN, experience 15 years expressway and over six years surveying in Europe—field and office. PW-5022, Engineering News-Record.

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1,000,000 GALLON ELEVATED STEEL WATER TANK

Sealed bids for the sale of a 1,000,000 gallon elevated steel water tank will be received until 2:30 P.M. Eastern Standard Time, February 17, 1955 by the Water and Sewer Board of the City of Miami at its regular place of meeting at 3342 Pan American Drive, Miami, Florida, at which time and place all bids will be publicly opened and read. The Board reserves the right to reject any or all bids. The purchaser shall dismantle and remove the tank at his own expense.

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FOR SALE

(Additional For Sale Ads on Page 81-83)

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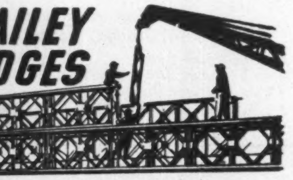

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Mdl. 77 Lorain, 1½ yd. Diesel Crane, Ser. 9163, 45-85′ boom, 20′ jib, wt. 40 ton.

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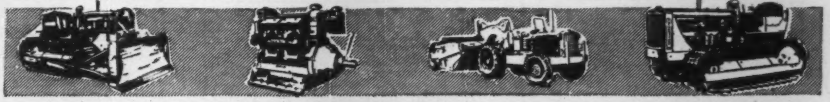

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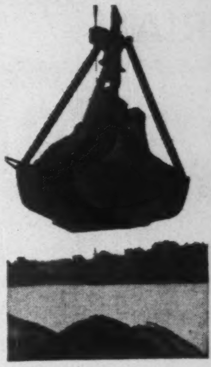

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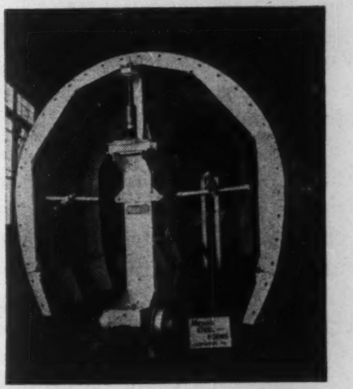

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EDITORIALS

Designing Against Metal Fatigue

AIRPLANE FAILURES and their ensuing investigations are seldom considered to offer a fruitful field of study for engineers concerned with the design of most civil engineering structures. At least very little such study has ever come to light. That this may be a mistake is suggested by the findings of the British investigators who probed last year's crashes of two Comet jet airliners into the Mediterranean Sea in a period of three months. What they have to say about fatigue of metals would seem to be important to every structural engineer, if only to emphasize that this potential danger is still lurking around and should never be ignored.

Bridge girders and crane girders, for example, are subject to many repetitions of load, and in the cutoff points of their cover plates have built-in stress-raisers that can generate fatigue cracks. Short span trusses, particularly under railroad loading, are another type of civil engineering structure in which fatigue is an important design consideration. Also, sometimes nowadays, structures are built of lighter, thinner materials than in the past, more susceptible to fatigue.

Under the circumstances, fatigue failures, no matter where they occur, are worth consideration. And the Comet jet airliner crashes are a case in point. That they were caused by fatigue failure of the aluminum alloy skin of the pressurized cabin was determined by the Royal Aircraft Establishment at Farnborough in what can only be regarded as one of the great scientific detective operations of the age. Painstaking studies were made of hundreds of pieces of one of the disintegrated planes salvaged from the deep waters of the Mediterranean. Then an intact Comet was tested in a tank where the pressurization cycle of the cabin, as occurs in climb, high altitude flight and descent, could be reproduced thousands of times, thus subjecting the metal skin to the repeated stressing it receives in actual operation, and in fact inducing a fatigue failure.

But it was in the public inquiry that followed the testing that several significant points with respect to fatigue of metals were re-emphasized: (1) Fatigue failure may start at small cracks, where high local stress concentrations can develop; (2) cracks that can be seen, and therefore evaluated or controlled, are not as dangerous as incipient, microscopic cracks which are difficult to detect; and (3) fatigue limits of aircraft metal may vary from one-third the average for a number of specimens to three times the average; in other words have a 9:1 scatter.

Each of these contentions respecting fatigue suggests that the phenomenon is always potentially present, and that the only way to minimize it is by ever-thoughtful design: avoid notch effects and stress-raisers, use materials with high energy absorption and notch toughness, for example. Fatigue experts in this country have also reported that prestressing, whether done with external forces by cold working or thermal processes, has frequently proved helpful. Furthermore, where stresses alternate between tension and compression, design stresses should be particularly conservative, and definitely below the endurance limit where one exists. If these precautions cannot be completely followed, it has sometimes proved beneficial to incorporate crack arresters—discontinuities—that prevent cracks from propagating completely through a critical section.

Jet airliners of the future are sure to take advantage of the lessons learned from the Comet crashes. The same lessons should not be lost to the designers of structures in which repeated or alternating stresses occur.

Caution Won't Build Them

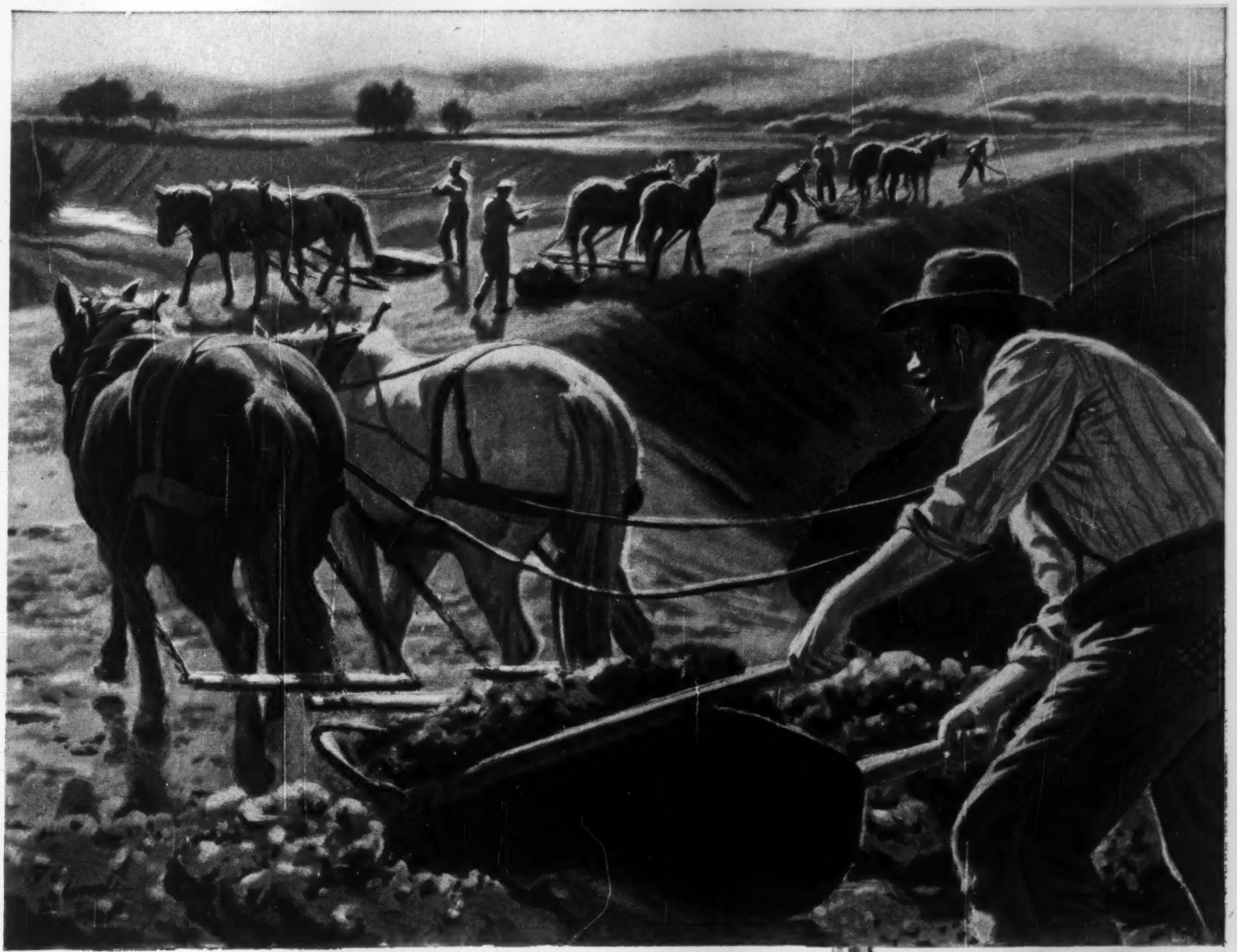
OUR AIRBASES IN SPAIN aren't progressing very fast. This may be according to plan since both the Air Force and its construction agency, the Navy's Bureau of Yards & Docks, announced in the beginning that this was not to be a "crash program." Still, success in achieving a leisurely pace on a construction job is an unnatural, not to say disquieting, state of affairs.

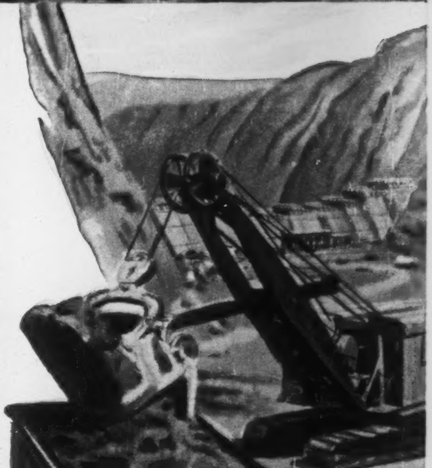
And in the Spanish situation, it has been accentuated over the past several months by returning visitors who placed the blame on Bureau of Yards & Docks' red tape. More in sorrow than in criticism, they have said, "You would never recognize BuDocks in Spain as the happy, hard-hitting, efficient outfit we are so used to here. They are so anxious to avoid the Corps of Engineers' troubles on the Moroccan bases that they are afraid to approve a requisition for a lead pencil unless it has three levels of approval signatures on it."

We didn't believe it then. We still can't believe it. Yet a subcommittee of the House Armed Services Committee headed by Representative William E. Hess of Ohio, after a look around in Spain, now says practically the same thing. It fixes the blame on "another level of decisions", which the Navy has placed between BuDocks and its contractors and architect-engineers.

And the committee, in its forthright report, supplements its fact finding by this conclusion: "The purpose of these contracts is to build bases, not to create internal arguments on cost accounting, nor to transfer from the engineering-officer-in-charge responsibility for decisions on technical matters of construction and engineering to auditors fretting over figures and their allocations."

Come on, Navy! Turn your BuDocks officers loose to do the fine job of engineering and construction management of which they are capable. Caution won't build bases. It won't even save any money, and is more likely to waste it. Congress is going to investigate your operations no matter what you do. And it will be more impressed by completed bases than by beautifully balanced ledgers and cross-referenced cost records.





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C Tournapull moves 100 saturated yards hourly over 2000′ of muddy grades

TIMKEN® bearings keep maintenance down

THE regrading of Minnesota State Highway 5 between Victoria and Chanhassen was seriously hampered by a long rainy spell. But mud or no mud, two LeTourneau-Westinghouse Tournapulls were able to load water-soaked clay, loam and sand, haul it over slippery, hilly roads, and complete a 2000′ cycle every 5 minutes! The 44 Timken® tapered roller bearings in each Tournapull and attached P19 scraper helped make it possible.

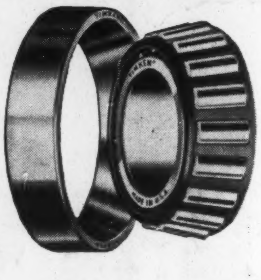
For example, to keep these Tournapulls working in dirt, mud and water, sometimes up to the axles, bearing seals had to be tight. By holding housings and shafts concentric, Timken bearings maintain effective closures—keep water, dirt and mud out, lubricant in.

Carrying heavy loads up steep grades puts tremendous thrust loads on the pinion bearings. But Timken bearings handle these thrust loads with ease—as well as all radial loads. That's because the tapered construction of Timken bearings lets them take both radial and thrust loads in any combination. Shafts are held rigid, gears mesh accurately. Wear is reduced. Gears last longer.

To get steel good enough for Timken bearings, we had to make our own. We're the only U. S. bearing maker that does. Timken bearings give longer life with less friction. Make sure the bearings on your machines are stamped with the trademark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

LeTOURNEAU-WESTINGHOUSE COMPANY mounts the differential pinion in its C Tournapull on Timken tapered roller bearings for longer life, less friction.



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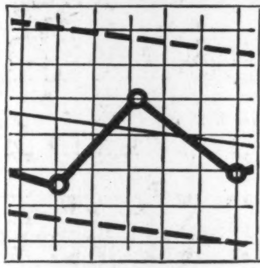

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